

Executive Summary

Of

Proposed Expansion of Re-rolled Products through Rolling mill by hot charging from 59,400 TPA to 1,18,800 TPA and Installation of 1X3.6 MVA Submerged Arc Furnace (SAF)

Proponent

*M/s Shriram Navin Kumar & Sons Private Limited
At Plot 104, Industrial Growth Center, Phase-II Siltara,
Raipur Chhattisgarh.*

By

***Pollution & Ecology Control Services
NAGPUR***

Environmental Consultant

Pollution and Ecology Control Services
Accreditation no.: NABET/EIA/2023/SA 0165 valid upto 10th April 2023

EXECUTIVE SUMMARY

1.0 INTRODUCTION

The proposed brownfield project attracts the provisions of EIA Notification, 2006 and falling under Category 'A' of Schedule 3 (a) Metallurgical Industries (Ferrous and Non-ferrous). The proponent made an online application on 30th October 2021 along with Form-1, Pre-feasibility report and other documents for Terms of Reference (TORs) for undertaking detailed EIA study. Standard ToR was granted vide letter J-11011/467/2021-IA. II(I) dated 9th November 2021 for undertaking EIA study for the proposed expansion of re-rolled product by hot charge through rolling mill from 59,400 TPA to 1,18,800 TPA and Installation of 1X3.6 MVA Submerged Arc Furnace (SAF) at CSIDC allotted 6.91 Acre (2.79 Ha) land to company at Plot No 104, Industrial Growth Center, Phase-II Siltara, Raipur, Chhattisgarh.

Project at a Glance

Sr. No.	Description	Details																																
1	Nature of the project	Proposed project of expansion of re-rolled product by hot charge through rolling mill from 59,400 TPA to 1,18,800 TPA and Installation of 1X3.6 MVA Submerged Arc Furnace (SAF)																																
2	Production Capacity	Proposed Capacity Expansion of Re-rolled Products through Rolling mill by hot charging from 59,400 TPA to 1,18,800 TPA by installing two additional Induction Furnace of capacity 10 T each and Installation of 1X3.6 MVA Submerged Arc Furnace (SAF).																																
3	Raw Material requirement for Existing and Proposed project	<p>The total raw material requirement for project is given in table below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Sr. No.</th> <th style="text-align: center;">Raw Material</th> <th style="text-align: center;">Existing Requirement (TPA)</th> <th style="text-align: center;">Proposed Requirement (TPA)</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;">Induction Furnace</td> </tr> <tr> <td style="text-align: center;">1.</td> <td>Sponge Iron</td> <td style="text-align: center;">50000</td> <td style="text-align: center;">50000</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Scrap</td> <td style="text-align: center;">11900</td> <td style="text-align: center;">11900</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Ferro alloys</td> <td style="text-align: center;">590</td> <td style="text-align: center;">590</td> </tr> <tr> <td colspan="4" style="text-align: center;">FeMn</td> </tr> <tr> <td style="text-align: center;">1.</td> <td>Mn Ore</td> <td style="text-align: center;">NIL</td> <td style="text-align: center;">15662</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Coke</td> <td style="text-align: center;">NIL</td> <td style="text-align: center;">4475</td> </tr> </tbody> </table>	Sr. No.	Raw Material	Existing Requirement (TPA)	Proposed Requirement (TPA)	Induction Furnace				1.	Sponge Iron	50000	50000	2.	Scrap	11900	11900	3	Ferro alloys	590	590	FeMn				1.	Mn Ore	NIL	15662	2.	Coke	NIL	4475
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		3.	Dolomitce	NIL	224
		4.	Quartzite	NIL	597
		5.	Carbon Paste	NIL	224
		SiMn			
		1.	Manganese Ore	NIL	9219
		2.	Ferro Manganese Slag	NIL	2990
		3.	Pearl Coke	NIL	1993
		4.	Steam Coal	NIL	1993
		5.	Quartz	NIL	997
		6.	Dolomite	NIL	1495
4	Water requirement for Existing and Proposed project	Existing: 43 KLD Proposed: 70 Total : 113 KLD Source: CIBL (Chhattisgarh Ispat Bhumi Limited (CIBL) Annexure V			
5	Power requirement & Source	The power requirement for expansion project will be 3000 KVA Source: State Electricity Board			
6	Land for proposed plant	Total land in Possession: 6.91 Acre (2.79ha) [at Siltara Industrial Area, phase II which is in Notified Industrial Area]			
7	Total manpower	Proposed: 230 nos. Existing: 170nos. Total after expansion 400 nos.			
8	Environmental Aspects	Air Pollution Control: Bag Filters along with fume extraction system followed by Stack to control source emission in Induction Furnace. Water sprinkling for dust suppression in different unit and internal roads to control fugitive emission. Water Pollution Control: Industrial waste water from IF and rolling mill (cooling process) will be stored and settled in settling tank and will be reused. The domestic wastewater will be treated in packaged type STP and treated water will be used for greenbelt development. Solid Waste: Slag of 2376 TPA from existing Induction Furnace and 2376 TPA from proposed expansion is being/will be sold to authorized vendors/brick manufacturing unit. Tail cutting (1782 TPA from existing and 1782 TPA from proposed rolling mill unit) is being/will be generated from rolling mill and reused in induction furnace.			

		6339 TPA of slag generated from production of FeMn will be used in manufacturing of Silico Manganese. OR 4983 TPA of Silico Manganese slag will be disposed through land filling in construction work.
9	Estimated Cost of the project	Existing cost is Rs. 7.92 Crores Proposed expansion cost is Rs. 16.1 Crores Total Cost after Expansion: Rs. 24.02 Crores

Location Details

i.	Plot no.	At Plot No 104, Industrial Growth Center, Phase-II Siltara, Raipur, Chhattisgarh
ii	Village	Siltara
iii	Tehsil	Raipur
iv	District	Raipur
v	State	Chhattisgarh
vi	Co-ordinates	A) 21°22'27.66"N 81°39'26.26"E B) 21°22'35.65"N 81°39'29.79"E C) 21°22'34.41"N 81°39'32.95"E D) 21°22'26.41"N 81°39'29.45"E
vii	Toposheet No.	64 G/11
viii	Elevation above MSL	275 MSL
ix	Nearest Highway	NH : 30 : 830 m (E)
x	Nearest Airport	Swami Vivekananda Airport Raipur : 22.5km (SE)
xi	Nearest Railway Station	Mandhar Railway Station : 6.2 Km (SE)
xii	Nearest Village	Siltara: 1.2 Km (ESE)
xiii	Forest	Nil
xiv	Nearest major water body	Kharon River : 3.5 Km (WNW) ChhokraNala : 2.6 Km (W) KulhanNala : 6.5 Km (ENE)
xv	Major Industries within 10 km area	1) Greenco Industries – 230 m – NNE 2) Kumar Industries – 540 m – SSW 3) Mahalaxmi Industries – 600 m – SSW 4) Saini Industries Limited – 890 m – SW 5) Ryb Industries – 1.4 km – SE 6) Jayswal Neco Industries Ltd. – 2.6 km – SSE 7) P. D. Industries Pvt. Ltd. – 440 m – NNW 8) Silverest Industries Private Limited – 2.7 km ENE 9) G. R. Minerals & Industries Pvt. Ltd. – 630 m W 10) Sarda Energy & Minerals Ltd. – 2.1 km - ESE

		11) SKS Ispath & Power Ltd. – 1.9 km - NW 12) Simran Group of Industries – 3 km - SSW 13) Godavari Power & Ispat Ltd. – 2 km - ENE 14) Shyam steel industries – 2.1 km - NNW
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2.0 PROJECT DESCRIPTION

The proposed project is for expansion of Re-rolled Products through Rolling mill by hot charging from 59,400 TPA to 1,18,800 TPA and Installation of 1 X 3.6 MVA Submerged Arc Furnace (SAF). The production scenarios of the existing and proposed plant are given in following table.

Production Scenario (Existing and Proposed)

S.N.	Products	Existing production capacity (TPA)	Production Capacity After expansion (TPA)
1	Rerolled product by hot charging through rolling mill	59,4040	1,18,800
2	Ferro Alloys FeMn OR SiMn	NIL	7458 OR 4983

The equipment's with its existing and proposed capacity are given in following table.

Equipments with Existing and Proposed Capacity

Equipment	Existing capacity	Proposed capacity
Induction Furnace	10 T X 2	10 T X 2
Submerged Arc furnace	NIL	3.6 X 1 MVA

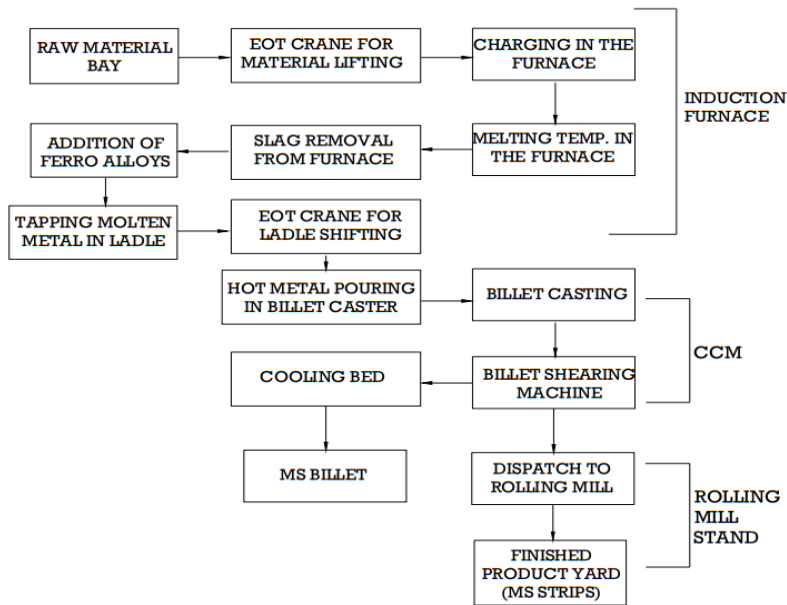
PROCESS DESCRIPTION

Manufacturing Process of Hot Billet Rolling

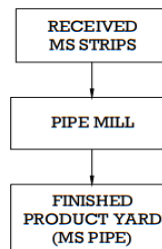
The induction furnace is used to melt many different sorts of metals, from common steel to more exotic alloys or precious metals. The greatest advantage of the induction furnace is its low capital cost, it's easier installation, simpler operation, and no noise generation and there is very little heat loss due to radiation from the furnace. The raw material (Sponge Iron, MS scrap, Ferro Manganese and Ferro Silicon) is charged into the induction furnace.

As soon as the furnace is charged, the switches admitting power current to the induction coil are closed.

After the furnace is switched on, current starts flowing at a high rate and a comparatively low voltage through the induction coil of the furnace, producing an induced magnetic field inside the central space of the coils where the crucible is located. As the magnetic fluxes cut through the scraps and complete the circuit, they generate an induced current in the scrap which is known as eddy current, this eddy current flows through the highly resistive path of the scrap mix, generates tremendous amounts of heat and melting of scrap starts. Soon a pool of molten metal forms in the bottom causing the charge to sink. The induced current which is generated in the charge mixed and heated more homogenously. As soon as the charge has melted clearly, any objectionable slag is skimmed off, and the necessary alloying elements are added. When these additives have melted completely, the power input may be increased to bring the temperature of metal upto the point most desirable for pouring. The current is then turned off and the furnace is tilted for pouring into a crucible. As soon as pouring has ceased the crucible is cleaned completely from any slag or metal droplets adhering to the wall of the crucible and the furnace is now ready for charging again. The temperature of the furnace will be 1650⁰C. When the total scrap as per the capacity of the crucible is molten, the sample is taken from liquid steel and tested for the composition of steel and the carbon contents. Therefore, some additives of ferro-alloys like Silico-manganese, silicon, aluminium shots and are added to the liquid steel to maintain the composition and quality. The billets in the molten stage are transferred to rolling line for the production of long product bypassing the reheating furnace. The cooled products are then inspected and dispatched. The process flow chart is presented below: -



PROCESSING FLOW CHART
INDUCTION FURNACE WITH CCM



PROCESSING FLOW CHART
MS PIPE

Process flow Chart for Hot Billet Rolling Process

Advantages of Hot Billet Rolling Process

- ❖ Energy saving is the main benefit as it consists in avoiding the normal cooling of the billet down to room temperature and the reheating for initiating the rolling. Thus the process is of less energy and more environmentally friendly.
- ❖ Billets in molten condition will be directly fed to Hot Billet Rolling machine, thus saving of fuel & electricity.
- ❖ No additional increment in GLC for PM & SO₂.
- ❖ No generation of Fly Ash.
- ❖ No space will be required for storage of Billets and fly ash.

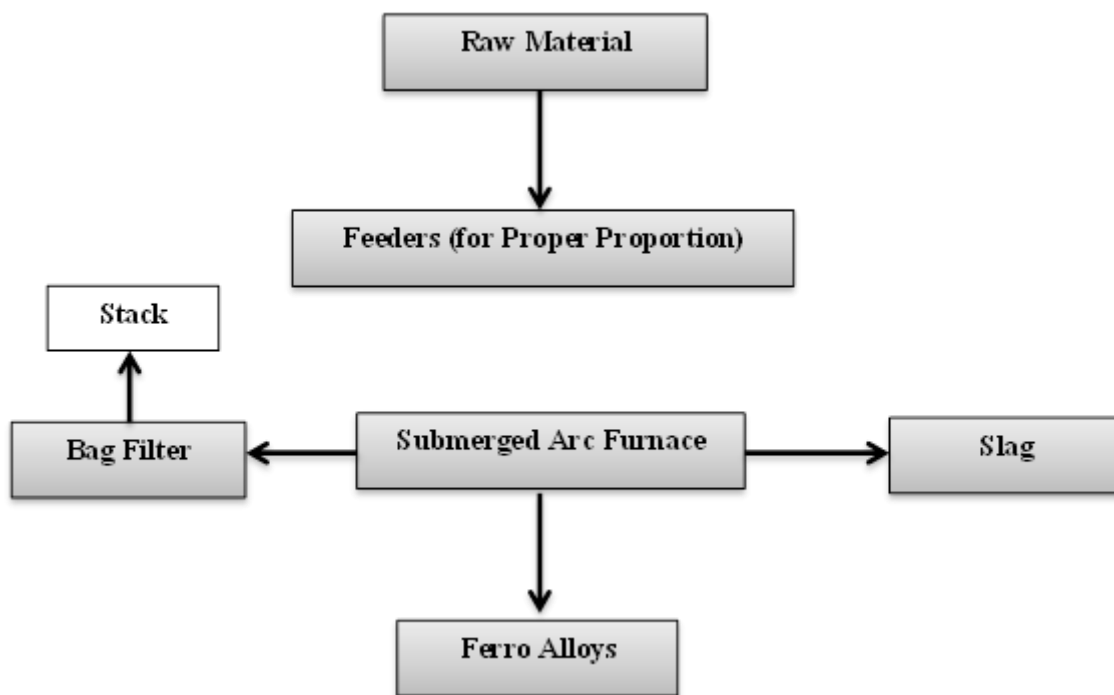
- ❖ Easy handling of Process
- ❖ Low operational cost of rolled steel depending on unit costs
- ❖ Reduced civil works and infrastructure costs
- ❖ Reduced energy consumption
- ❖ Less man power required

Submerged Arc Furnace

Standard Ferro Manganese is melted at about 1700 - 1800°C. This is achieved by a conventional Submerged Arc Electric Furnace. The three carbon electrodes, partially submerged in the charge, are supported on hydraulic cylinders for upward and downward movements to maintain the desired electrical conditions in the furnace.

The body of the furnace is cylindrical in shape, and is lined with firebricks, silicon carbide bricks and carbon tamping paste. Two tap-holes are provided at 120 Deg. apart for draining out both the molten alloy and the slag. During the repair works of one of the tap holes the other will function as standby. The raw materials are thoroughly mixed in the proper proportion before being charged into the furnace. Manual poking rods or stoker car are used for stoking the charge on the furnace top.

As the charge enters the smelting zone, the alloyed form by chemical reactions of the oxides and the reductant, being heavy gradually settles at the bottom. The slag produced by the unreduced metal oxides and the flux, being relatively lighter, floats on the alloys surface. At regular intervals the furnace is tapped. The tap hole is opened by Oxygen lancing pipe and after tapping is completed, it is closed by clay plug. The liquid Silico-manganese and the slag flow into the C.I. Pan. The slag being lighter overflow from the C.I. Pan or sand mold and is taken into the sand mould. The alloy cake from C.I. Pan is removed and broken manually with hammer to required lump size. The slag produced in the process, after cooling is removed by lorry to the slag dump. The process flow chart for production of Ferro Alloys is given in following figure.



Process flow Chart for Production of Ferro Alloys

Capital Cost

Total cost of the project of the proposed expansion project is Rs. 16.1 Crores. The budgetary provision for EMP is Rs. 75 Lakhs.

Budget for Implementation of Environmental Management Plan

The capital cost for environmental protection measures for proposed project will be as Rs. 75 Lacs. The annual recurring cost towards the environmental protection measures for proposed project will be Rs. 7.5 Lakhs.

Site Selected for the Project

The company has proposed the capacity enhancement without change in plant & machinery. M/s. Shriram Navin Kumar & Sons Private Limited has proposed expansion project of re-rolled product by hot charge through rolling mill from 59,400 TPA to 1,18,800 TPA and Installation of 1X3.6 MVA Submerged Arc Furnace (SAF) at CSIDC allotted 6.91 Acre (2.79 Ha) land to company at Plot No 104, Industrial Growth Center, Phase-II Siltara, Raipur, Chhattisgarh..

3.0 DESCRIPTION OF THE ENVIRONMENT

Air Environment

The ambient air quality monitored at 8 locations selected based on predominant wind direction, indicated the following ranges;

PM₁₀: 36.5 - 82.6 µg/m³

PM_{2.5}: 22.2 - 44.6 µg/m³

SO₂: 6.4 - 18.6 µg/m³

NO_x: 14.8 - 36.4 µg/m³

CO: 0.4 – 1.6 mg/m³

Industrial Area Residential, Rural Area (CPCB Norms)	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	2 mg/m ³

The concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x were found within the National Ambient Air Quality Standards (NAAQ).

Water Environment

A total 16 samples including eight surface & eight ground water samples were collected and analyzed. The water samples were analyzed as per Standard Methods for Analysis of Water and Wastewater, American Public Health Association (APHA) Publication.

The data indicates that the ground water as well as the surface water quality is below the stipulated standard for drinking water (BIS 10500 – 2012). Except high concentration of total coliform in surface water, this may be due to the human activities.

Noise Environment

It has found that in the proposed expansion plant, noise levels are in the range of 30.0 – 74.0 dB (A) at all eight stations during day time and noise levels are in the range of 30.0 – 57 dB(A) at all eight stations during night time. Maximum levels of noise have recorded in day hours which are natural as our most of activities have done in day hours.

Land Environment

Total eight samples were collected and analysed for physic-chemical characteristics at selected locations in the study area to assess the existing soil conditions around the proposed project site. The relevant parameters show the following characteristics:

- a) Texture of all soil samples are silty-Clay in Texture Classification.
- b) Colour of soil samples from agriculture is brown, black & Yellow in color.
- c) The bulk density of soil samples are in the range of 1.21 to 1.26 gm/cc.
- d) Soil samples have pH values in the range of 7.40 to 7.94. The pH values are indicating nature of soil samples as neutral.
- e) Soil samples have conductivities between 0.234 to 1.55700 mmhos/cm.
- f) Soil samples have Organic Matter between 0.33 to 10.3 %. These values represent average fertility of soils.
- g) Soil samples have concentration of Available Nitrogen values ranged between 186.4 to 364.2 kg/ha.
- h) Soil sample have concentration of Available Phosphorous values ranged between 29.5 to 99.8 kg/ha.
- i) Soil sample have concentration of Available Potassium values range between 237.1 to 1008 kg/ha.

4.0 Anticipated Impacts & Mitigation Measures

Impact on Air quality

The impacts on air quality due to source of the air pollution in the proposed expansion activities have been identified.

The present baseline concentrations were monitored in the EIA study. The additional emissions are mainly from induction furnace during melting process.

The proposed project activity will result in air emissions from the following areas.

- a) Raw material Handling and storage area
- b) Induction Furnace
- c) Transportation

The atmospheric dispersion modeling and the prediction of ground level pollutant concentrations has great relevance in the following activities:

- Estimation of impact of industry on surrounding environment.
- Estimation of maximum ground level concentration and its location in the study area.

The mathematical model used for predictions on air quality impact in the present study area is AERMOD.

The predicted ground level concentrations obtained when superimposed on the baseline concentrations are within the prescribed NAAQ Standards for residential areas.

In point source emissions, the stacks are subjected to plume rise which again is dependent on force of buoyancy and momentum. The higher is the plume rise or stack, the lesser will be ground level concentrations (GLC's). The emissions when released into the atmosphere are subjected to transportation, dispersion, transformation, and fall out and wash out and finally reach the ground level at a particular distance. That's why the GLC is comparatively low at project site

Mitigation Measures

- Company shall provide dust suction system which will control fugitive emission due to material and raw material handling.
- Regular monitoring of air quality parameters.
- The vehicles transporting raw materials will be covered with tarpaulin in order to prevent dust emission during the transport.
- It would be ensured that all the vehicles in the working zone are properly maintained to keep emissions within the permissible limits.
- At loading and unloading points, arrangement for Water sprinkling will be made so that dust generation during transportation of materials will brought down to minimal.
- The finished product will be transported by the same trucks carrying raw material.
- Plantation in the plant premises will be done in the 33% of the total land.
- All the internal roads shall be concreted / asphalted to reduce the fugitive dust due to vehicular movement

Whenever, APCS is not working, then raw material feed will be stopped. Consequently, there will be no production in the unit till APCS is rectified.

Raw Material Handling / Transport System

Raw materials like Scrap, Sponge Iron etc. when transferred within the premises by road, Wagon Tripler, etc. will lead to the fugitive dust emissions. Dust is/will be generated from all the transfer points of belt conveyors. This is/will be controlled by providing bag filters at material transfer points. Dust may be generated due to

carryover by wind. However, to avoid this, the raw material is/will be stored in covered shed.

Mitigation Measures

- The fumes from the proposed Induction Furnace will be extracted through fume extraction system placed over the furnace connected to bag filter followed by stack of 30 mt height.
- During induction melting of steel scrap, lot of sparks gets generated. For the purpose of arresting sparks & flame, it is necessary to have an arrestor which arrests sparks. The device provided will be a centrifugal cyclone, which removes sparks and also collects coarser particles. The collected dust in the cyclone hopper can be drained periodically into a drum when the system is shut or a continuous motorized rotary air lock valve can be provided.
- The flue gases generated from existing Sponge Iron project are re-used to generate electricity.
- At all the points, Dust Collectors/ dust suppression systems/ESP is installed.
- Water sprinkling is being/will be done regularly to control the fugitive emissions.
- All internal roads are tarred.
- All belt conveyors are covered.
- Ambient air quality monitoring shall be carried out on regular basis to ensure the compliance with National Ambient Air Quality Standards (NAAQS). The ambient air quality within the factory premises shall not exceed the standards (PM_{10} 100 $\mu\text{g}/\text{m}^3$, $PM_{2.5}$ 60 $\mu\text{g}/\text{m}^3$, SO_2 80 $\mu\text{g}/\text{m}^3$, NO_x 80 $\mu\text{g}/\text{m}^3$ and CO 04 $\mu\text{g}/\text{m}^3$) prescribed by CPCB.

Noise Environment

It has found that in the proposed expansion plant, noise levels are in the range of 30.0 – 55.0 dB (A) at all eight stations during day time. Maximum levels of noise have recorded in day hours which are natural as our most of activities have done in day hours.

Noise levels measured at all eight stations are well within limit of either 65.0 dB(A) for Residential Area or 75.0 dB(A) for Industrial Area as given in MoEF Gazette notification for National Ambient Noise Level Standard.

Mitigation Measures

The noise levels will not exceed the standards stipulated by Central Pollution Control Board at any point of time. The equipments will have inbuilt noise control devices. The measured noise level produced by any equipment will not exceed 85 dB(A) at a distance of 1.0-m from its boundary in any direction under any load condition. The noise produced in valves and piping associated with handling compressible and incompressible fluids will be attenuated to 75 dB(A) at a distance of 1.0 m from the source by the use of low noise trims, baffle plate silencers/line silencers, acoustic lagging (insulation), thick-walled pipe work as and where necessary. The general mitigation for the attenuation of the noise are given below:

- ❖ Encasement of noise generating equipment where otherwise noise cannot be controlled
- ❖ Providing noise proof cabins to operators where remote control for operating noise generating equipment is feasible.
- ❖ In all the design/installation precautions are taken as specified by the manufacturers with respect to noise control will be strictly adhered to;
- ❖ High noise generating sources will be insulated adequately by providing suitable enclosures;
- ❖ Use of lagging with attenuation properties on plant components / installation of sound attenuation panels around the equipment
- ❖ Other than the regular maintenance of the various equipment, ear plugs/muffs are recommended for the personnel working close to the noise generating units;
- ❖ All the openings like covers, partitions will be designed properly
- ❖ Inlet and outlet mufflers will be provided which are easy to design and construct.
- ❖ All rotating items will be well lubricated and provided with enclosures as far as possible to reduce noise transmission. Extensive vibration monitoring system will be provided to check and reduce vibrations. Vibration isolators will be provided to reduce vibration and noise wherever possible;

- ❖ The insulation provided for prevention of loss of heat and personnel safety will also act as noise reducers.

Impact on Water

Total Water requirement for the project will be about 113 KLD. Water requirement for the project will be sourced from Chhattisgarh Ispat Bhumi Limited (CIBL), and Ground water. Permission has already obtained. (20 KLD from CIBL and 23 KLD from CGWA) for existing facility. The additional water requirement for proposed expansion will be met from CIBL. 60 KLD Industrial waste water will be treated in settling tank. Domestic waste water will be taken to adequately designed 20 KLD STP. The treated water will be recycled for utilization in Green Belt Development.

Impact on Terrestrial ecology

There is no National park, Wildlife sanctuary, Biosphere reserves and protected forest within 10 km of the plant area. No schedule- I species were recorded in the core and buffer zone of plant area during the biodiversity assessment. There may be an impact on the biological environment of the area due to operation of plant, if proper care will not be taken:

- Particulate matter emissions and fugitive emissions due to transportation activity & material handling may degrade the soil quality of surrounding environment that may affect the biodiversity of surrounding environment.
- Fugitive emissions (dust) may impact the terrestrial flora. The settlement of dust on the laminar surface of plants can impede the efficiency of photosynthesis and thereby, affect the productivity of plants. In some of the plant, it may also smother the leaf surface blocking stomata, resulting in reduced transpiration.

The present running plant has no significant impact on surrounding ecology and biodiversity as following mitigation measures have been / will be adopted:

- Greenbelt development and plantation in and around the plant site.
- Using paved roads for transportation to minimize fugitive emissions.
- Transporting material in truck covered with tarpaulin and storing it under covered facilities.
- Transport vehicles and machinery will be properly maintained and periodically checked for pollution level to reduce noise and gaseous emission in the surrounding environment.

Solid Waste Generation

The solid waste generation and utilization from the M/s. Shriram Navin Kumar & Sons Private Limited is given below as table.

Solid Waste Quantity and Disposal for Existing and Proposed plant

Solid Waste	Quantity	Mitigation Measures
Existing		
Slag	2376 TPA	Sale to authorized vendors/ Brick manufacturers
Tail Cuttings	1782 TPA	Recycled back as raw material in own induction furnaces
Proposed		
Slag	2376 TPA	Sale to authorized vendors/ Brick manufacturers
Tail cutting	1782 TPA	Recycled back as raw material in own induction furnaces
Ferro Manganese Slag	6339 TPA	Ferro Manganese slag will be used in manufacturing of Silico Manganese.
Silico Manganese Slag	4983 TPA	The Silico Manganese slag will be disposed through land filling in construction work.

Impact on Socio-Economic Environment

M/s Shriram Navin Kumar & Sons Ispat Ltd. is providing direct employment 230 nos. workers for proposed expansion project. The local persons will be given preference in employment as per the qualification and technical competencies. In order to mitigate the adverse impacts likely to arise in the proposed project activities and also to minimize the apprehensions to the local people, it is necessary to formulate an affective EMP for smooth initiation and functioning of the project. The suggestions are given below:

- ❖ Communication with the local people will be established regular basis by project authority to provide an opportunity for local youth.
- ❖ Project authorities will undertake regular environmental awareness program on environmental management
- ❖ Job opportunities are the most demanding factor, the local people as per their education will be employed.
- ❖ For social welfare activities to be undertaken by the project authorities, collaboration should be sought with the local administration, gram panchayat, block development office etc. for better coordination.

The overall impact on the socio economic environment will be significant.

5.0 Environmental Monitoring Programme

M/s. Shriram Navin Kumar & Sons Private Ltd. is carrying out the environmental monitoring on regular basis in existing unit and the methodologies adopted are in accordance with the CPCB guidelines.

The environmental monitoring locations are selected where environmental impacts are likely to occur due to the operation of existing and proposed project as the main scope of monitoring program is to track, timely and regularly, the change in environmental conditions and to take timely action and adopt mitigation measures for protection of environment.

Ambient Air Quality Monitoring

Ambient air quality monitoring in and around the plant is also being carried out by NABL accredited lab Ultimate Environmental Solutions on regular basis and reports are being submitted to CECEB regularly.

Water Quality Monitoring

Surface and Ground water quality samples are being collected and analyzed by NABL accredited lab, samples are collected from different locations on quarterly basis and analyzed. Reports are being submitted to CSPCB, CPCB and MoEF.

The plant is maintaining zero liquid discharge and as per guidelines issued by CPCB.

Noise Environment

Noise levels are being monitored at various locations of the plant premises for day and night time as per the CPCB guidelines.

Fugitive emission

Monitoring of ground level dust concentration/Fugitive emission along with gaseous pollutants viz SO₂, NO_x are being carried out periodically. Dust concentration and gaseous emission levels from all the fugitive sources being regularly monitored.

Necessary control measures are being adopted to keep the secondary fugitive emission within limits.

Same practice will be continued after proposed expansion project.

6.0 Additional Studies

The additional studies as per the ToR issued by MoEF&CC are Public Consultation, Social Impact Assessment, Risk Assessment, & Disaster Management Plan.

7.0 Project Benefits

Total cost of the project of the proposed expansion project is Rs. 16.1 Crores. The budgetary provision for EMP is Rs. 75 Lakhs.

Environment Management Cost for Proposed Project

Sr. No.	Component	Description	Capital cost Rs. In Lacs	Operational and Maintenance cost (Rs. in Lacs/yr)
1	Air Pollution Control	Bag Filters, ID fan and Suction Hood	Rs. 60 Lacs	Rs. 6.0 lacs
2	Water Pollution Control	Packaged Type STP	Rs. 10 Lacs	Rs 1.0 Lac
4	Green Belt	Plantation	Rs.5.0 Lacs	Rs.0.50 lac
Total			Rs. 75 Lacs	7.5 Lacs

8.0 Environmental Management Cell

A separate environmental management cell is established to implement the management plan. The Environmental Cell is functioning under the control of the General Manager along with the EMS team of the company to monitor the environmental measures. The Environmental Management cell for M/s Shriram Navin Kumar & Sons Ispat (P) Ltd.

The cell is responsible for monitoring ambient air quality, stack emission, ambient noise in the plant and vicinity, waste water quality and discharge, quality of water bodies receiving effluent, workplace air quality and maintenance of analytical instruments. Additional responsibilities of the cell include the following:

- Conducting annual environmental audit and submit audit report to State Pollution Control Board
- Submission of all statutory reports and returns
- Conduct regular training programs to educate plant personnel on environmental awareness
- Inform the management regularly about conclusions/results of monitoring and recommend environmental protection measures

The following mitigation measures will be undertaken for the proposed project:

AIR POLLUTION

- Company shall provide dust suction system which will control fugitive emission due to material and raw material handling.
- Regular monitoring of air quality parameters.
- The vehicles transporting raw materials will be covered with tarpaulin in order to prevent dust emission during the transport.
- It would be ensured that all the vehicles in the working zone are properly maintained to keep emissions within the permissible limits.
- At loading and unloading points, arrangement for Water sprinkling will be made so that dust generation during transportation of materials will brought down to minimal.
- The finished product will be transported by the same trucks carrying raw material.
- Plantation in the plant premises will be done in the 34% of the total land.
- All the internal roads shall be concreted / asphalted to reduce the fugitive dust due to vehicular movement
- Whenever, APCS is not working, then raw material feed will be stopped. Consequently, there will be no production in the unit till APCS is rectified.

WATER POLLUTION

Industrial waste water will be treated in settling tank of Domestic waste water will be taken to adequately designed 20 KLD STP. The treated water will be recycled for utilization in Green Belt Development.

NOISE POLLUTION

The general mitigation measures are to be adopted in the proposed project are given below:

- ❖ Encasement of noise generating equipment where otherwise noise cannot be controlled
- ❖ Providing noise proof cabins to operators where remote control for operating noise generating equipment is feasible.
- ❖ In all the design/installation precautions are taken as specified by the manufacturers with respect to noise control will be strictly adhered to;

- ❖ High noise generating sources will be insulated adequately by providing suitable enclosures;
- ❖ Use of lagging with attenuation properties on plant components / installation of sound attenuation panels around the equipment
- ❖ Other than the regular maintenance of the various equipment, ear plugs/muffs are recommended for the personnel working close to the noise generating units;
- ❖ All the openings like covers, partitions will be designed properly
- ❖ Inlet and outlet mufflers will be provided which are easy to design and construct.
- ❖ All rotating items will be well lubricated and provided with enclosures as far as possible to reduce noise transmission. Extensive vibration monitoring system will be provided to check and reduce vibrations. Vibration isolators will be provided to reduce vibration and noise wherever possible;
- ❖ The insulation provided for prevention of loss of heat and personnel safety will also act as noise reducers.

SOLID WASTE MANAGEMENT

- The Slag of 2376 TPA from existing Induction Furnace and 2376 TPA from proposed expansion will be sold to authorized vendors/brick manufacturing unit. Tail cutting (1782 TPA from existing and 1782 TPA from proposed rolling mill unit) is being/will be generated from rolling mill and reused in induction furnace.
- 6339 TPA of slag generated from production of FeMn will be used in manufacturing of Silico Manganese. OR 4983 TPA of Silico Manganese slag will be disposed through land filling in construction work.

GREEN BELT DEVELOPMENT

The plantation helps to capture the fugitive emissions and attenuate the noise apart from improving the aesthetics quality of the region Avenue plantation within the plant and green belt development will be done. Avenue plantation within the plant and green belt development is done. Adequate plantation will substantially abate the dust pollution, filter the polluted air, reduce the noise and ameliorate the plant

environment. An additional land has been leased out for plantation purpose.

Total plot area is 2.79 ha. The green belt of 33% has been developed in the existing land of 2.79 ha. 1600 trees are already planted and about 700 more trees will be planted by gap filling in the existing green belt area. 1.69 ha. of land (Leased) has been developed as green belt located at a distance of 1km from the proposed site, 1800 saplings are already planted in the area and 2400 more will be planted with in a year.

9.0 Conclusion

It can be concluded that there would be negligible impact in the buffer zone due to the proposed expansion. The project shall contribute to the socio-economic development, strengthening of infrastructural facilities like medical, educational etc. The plant shall be operated keeping "Sustainable Development" of the region in mind.

Further, management is committed to contribute towards improving socio-economic status of the surrounding local community.

Environmental monitoring is a successful tool for the management for implementation of adequate & effective environmental measures. It also helps the management to take mid-course correction, if required based on the environmental monitoring results. Considering the above overwhelming positive impact on the community, there shall be overall development of the area.