

Executive Summary

of

Proposed change of product from 3.6MVA SAF (from 10500TPA C.I. Lumps/Balls to 9200 TPA Ferro Alloys) Proposed 5.4MVA Submerged Arc Furnace for production of 13,800 TPA Ferro Alloys, Proposed Rolling Mill 18000 TPA For MS Strip/Round Bar/Square with Coal Gasifier 1750nm³/Hr, Proposed 1x750 KW + 1x2250KW Induction Furnace for 8400 TPA for Casting & Forging of Iron & Steel, Proposed 1x550 KW + 1x750 KW +1x2250KW Induction Furnace for 12000 TPA for Casting & Forging of Iron &Steel and steel Billets /Ingots and Proposed Iron Ore Washing of 500000 TPA capacity.

Project Proponent:

M/s .EarthStahl & Alloys Pvt. Ltd.

**Village-Duldula, Tehsil : Simga, Dist. Baloda Bazaar,
Chhattisgarh**

EIA Consultant

**Pollution & Ecology Control Service
Dhantoli, Nagpur.**

Executive Summary

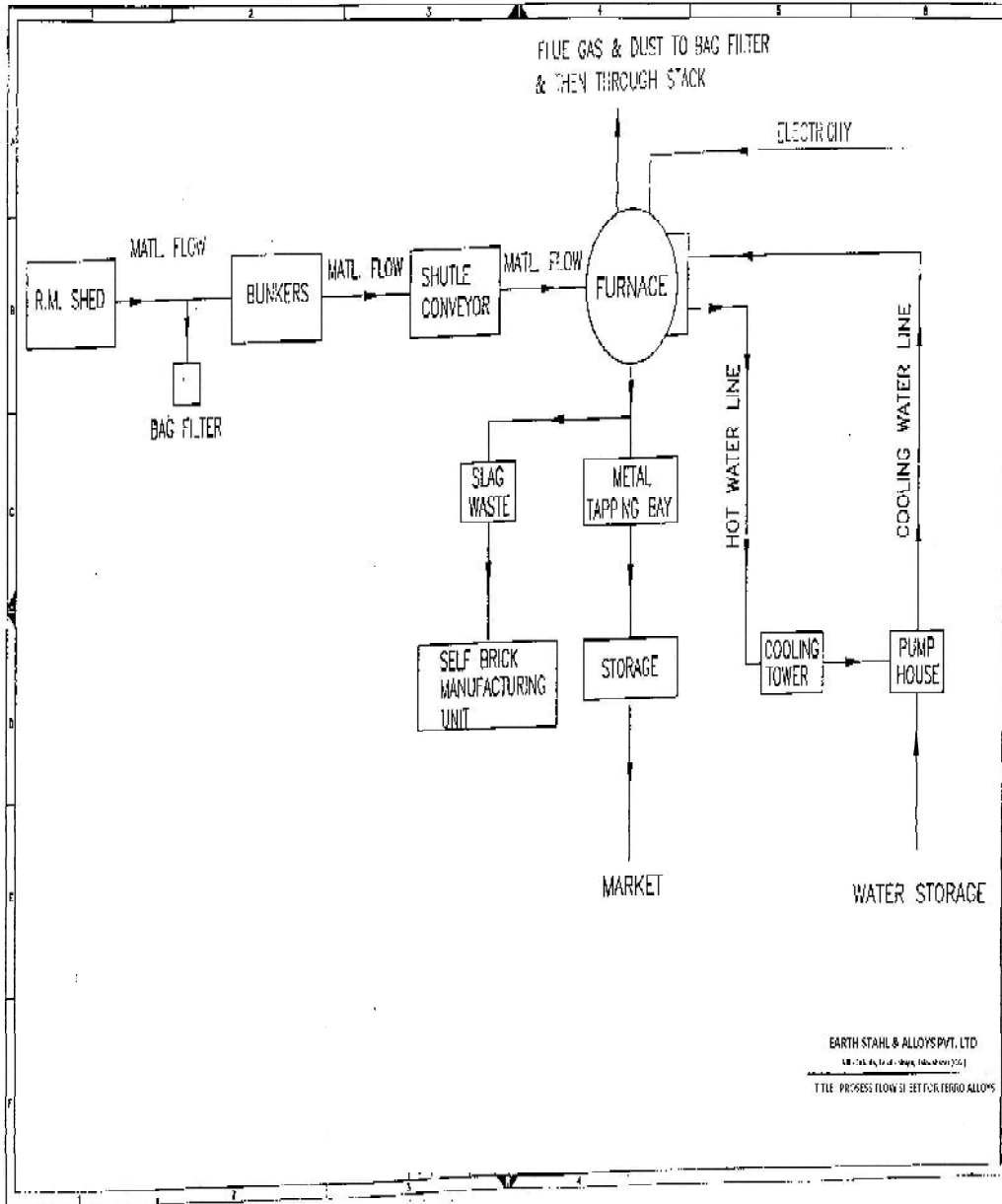
PREAMBLE

Environment Impact Assessment (EIA) is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for projects. It aims predicting environmental impacts at an early stage of project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision makers. By using EIA, both environmental and economic benefits can be achieved. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project design. By considering environmental effects and mitigation early in the project planning cycle, there saving overall time and cost of the project. Properly conducted EIA also lessens conflicts by promoting community participation, informs decision-makers, and helps lay the base for environmentally sound projects.

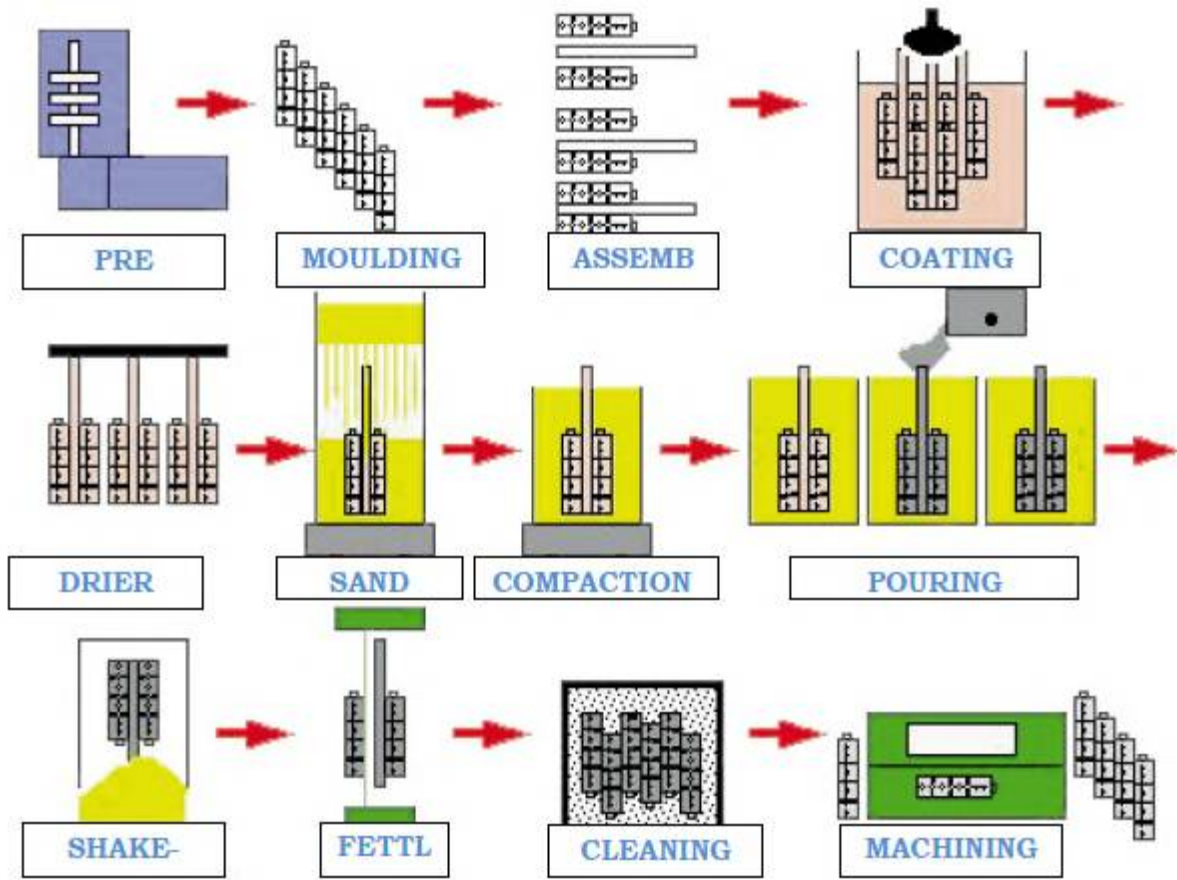
Pollution & Ecology Control Services (PECS), Nagpur presents this Environmental Impact Assessment Report on behalf of Earthstahl and Alloys Pvt. Limited (EAPL) for Proposed change of product from 3.6MVA SAF (from 10500TPA C.I. Lumps/Balls to 9200 TPA Ferro Alloys) Proposed 5.4MVA Submerged Arc Furnace for production of 13,800 TPA Ferro Alloys, Proposed Rolling Mill 18000 TPA For MS Strip/Round Bar/Square with Coal Gasifier 1750nm³/Hr, Proposed 1x750 KW + 1x2250KW Induction Furnace for 8400 TPA for Casting & Forging of Iron & Steel, Proposed 1x550 KW + 1x750 KW +1x2250KW Induction Furnace for 12000 TPA for Casting & Forging of Iron & Steel and Steel Billets/Ingots, and Proposed Iron Ore Washing of 500000 TPA capacity.

DESCRIPTION OF PROCESS

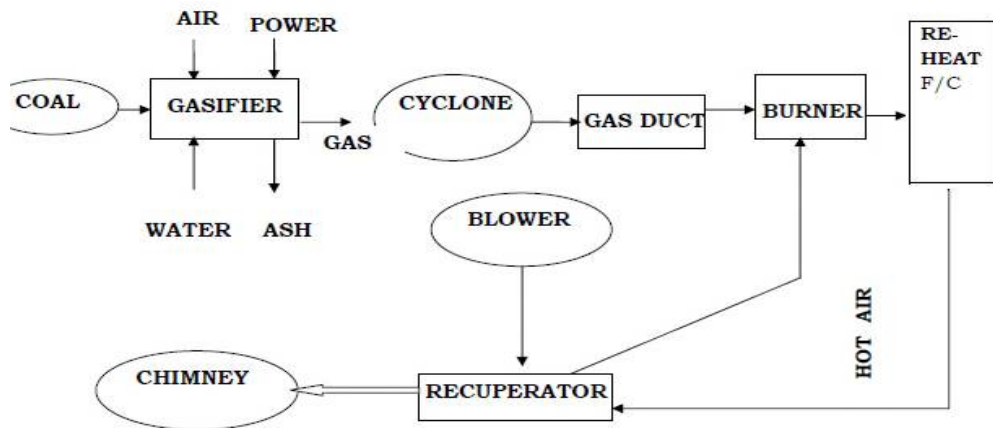
Manufacturing Process of Ferro Alloys



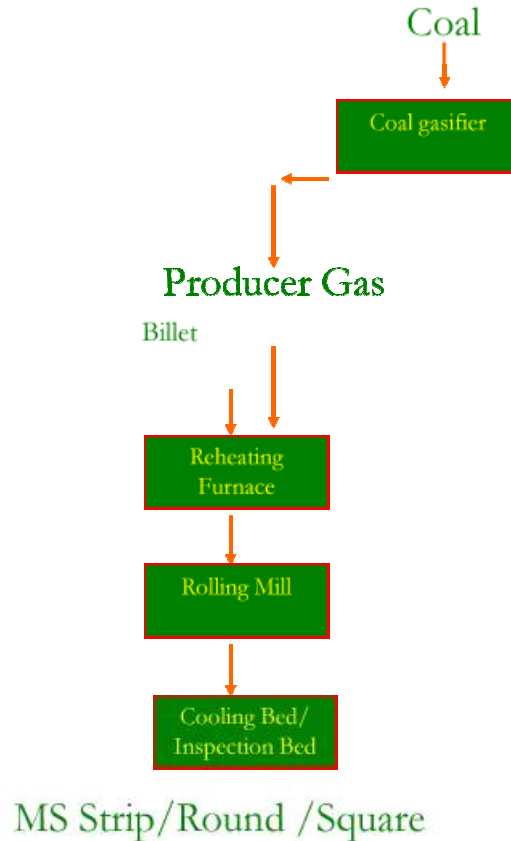
Process of Induction Furnace



Coal Gasifier Flow Chart



Manufacturing Process of Rolling Mill



DESCRIPTION OF ENVIRONMENT

The baseline environmental quality for the period of October, November & December 2016 was assessed in an area of 10 km radius around the proposed project site.

Air Environment

The predominant wind directions were from W (16%), from NW (12%). Average wind speed was 2.95 km/hr during monitoring period.

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

PM₁₀ : 37.8 to 53.7 µg/m³.
 PM_{2.5} : 18.0 to 35.2 µg/m³
 SO₂ : 7.8 to 19.2 µg/m³
 NO_x : 12.5 to 31.7 µg/m³

Industrial Area Residential, Rural Area (CPCB Norms)	PM ₁₀	PM _{2.5}	SO ₂	NO _x
	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/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 13 samples including five surface water & 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 are below the stipulated standard for drinking water (BIS 10500 – 2012) except high concentration of total coli form in surface water, which may be due to the human activities.

Noise Environment

Noise levels measured at eight stations are within limit of 55.0 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.

Area Code	Category of Area	Limits in dB(A) Leq	
		Day time	Night time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone**	50	40

** Silence zone is defined as area up to 100 meters around premises of hospitals, educational institutions and courts. Use of vehicle horns, loud speakers and bursting of crackers are banned in these zones

Land Environment

Five Soil samples were collected analyzed for physico-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.

The characteristics of the soil sample were compared with different depths for respective parameters.

The observations of soil characteristics are discussed parameter wise below;

- (a) Texture of soil samples from agriculture land are silty-clay loam and sample from waste land and RF are sandy loam in Texture Classification.
- (b) Colour of soil samples from agriculture and waste lands are gray and yellow and sample from RF are red in colour.
- (c) The bulk density of soil samples from waste land are in the range of 1.44 to 1.49 g/cc and sample from agriculture land are in the range of 1.52 to 1.53 g/cc and sample from RF are in the range of 1.50 to 1.56 g/cc.
- (d) Soil samples from Waste land have pH values between 6.0 to 8.3 and sample from agriculture land have 7.0 to 8.5 and sample from RF have 6.2 to 7.0 ranges of pH values. The pH values are indicating nature of soil samples is neutral to alkaline in agricultural land and acidic in RF and waste lands.
- (e) Soil samples from Waste land have conductivities between 0.065 to 0.998 mmhos/cm and conductivities of soil sample from agriculture land ranges between 0.273 to 0.692 mmhos/cm and conductivities of soil sample from RF ranges between 0.069 to 0.114 mmhos/cm.
- (f) Soil samples from Waste land have Organic Matter between 0.49 to 0.83 % and sample from agriculture land have between 0.39 to 1.51 % Organic Matter and sample from RF have between 0.73 to 0.88. These values represent good fertility of soils.
- (g) Soil samples from Waste land have concentration of Available Nitrogen values ranged between 198.1 to 3336.1 kg/ha and samples from agriculture land range

between 376.4 to 416 kg/ha and samples from RF range between 297.2 to 356.6 kg/ha Available Nitrogen value.

- (h) Soil sample from Waste land have concentration of Available Phosphorous values ranged between 2.3 to 10.8 kg/ha and soil samples from agriculture land have concentration values ranges from 3.1 to 14.6 kg/ha and samples from RF have concentration values ranges from 5.4 to 10.8 kg/ha.
- (i) Soil sample from Waste land have concentration of Available Potassium values range between 212.4 to 239.6 kg/ha and sample from agriculture land concentration of Available Potassium as its values range between 125 to 570 kg/ha and sample from RF have values range between 71.3 to 84.3 kg/ha.
- (ii) Characteristic of Waste land soil is a little deficient in nutrients concentration. Whereas, agricultural land soils are moderately suitable for cultivation of climatic crops and have good fertility.

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Impact on Air Quality

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

Sources of Emissions

Emissions released from the stack during operation phase will get dispersed in the atmosphere and finally reach the ground at a specified distance from the sources. From the proposed activities the possible environmental impact on air quality has been envisaged due to the following sources.

In this case the source emission is envisaged from furnace during roasting of manganese ore with coal. Eight Stacks of height of 30 m (Three stacks in existing & five stacks proposed) and one stack of 40 m is also proposed for proper dispersion of gases.

Raw Material Handling / Transport System

The possible pollutants are fugitive dust emissions from raw materials handling areas viz. loading / unloading, fuel stockyard, crushing units etc. The major sources of pollution from proposed units can be classified under the following heads:

- Pollutants in the waste gases namely, suspended particulate matter (SPM), sulphur dioxide, NO_x and Carbon monoxide, etc.
- Fugitive dust generated during vehicular movement

Mitigation Measures

- M/s. Earthstahl and Alloys Private Ltd. shall provide dust suction system which will control fugitive emission due to material and raw material handling.
- Dust suppression system will be provided in the form of water sprinklers.
- All vibrating screens and weigh feeders below the hopper; day bins etc are totally covered to prevent leakages of dust.
- All bins are packed and covered so that there is no chance of dust leakage.
- Regular monitoring of air polluting concentrations, etc.
- Installation of Wet Scrubbers followed by Stack.

Noise Levels

During operation, the major noise generating sources are grinding mill, loading sections, blenders etc. These sources will be located far off from each other. Under any circumstances the noise level from each of these sources will not exceed 85 dB (A). Noise levels generated in the project site will be confined within the proposed plant the impact of noise levels on surrounding will be insignificant.

Mitigation Measures

The noise levels stipulated by Central Pollution Control Board at any point of time will not exceed the standards.

- ❖ By providing padding at various locations to avoid sharp noise due to vibration.
- ❖ 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.
- ❖ The insulation provided for prevention of loss of heat and personnel safety will also act as noise reducers.

Impact on Water

Water is required in the plant mainly for the purpose of equipment cooling, in Ferro alloys, Induction furnace and Iron Ore washing purpose. Water is also required for drinking, sanitary, and firefighting purposes. In order to conserve water and minimize the make-up water requirement, it is proposed to adopt recirculating system after proper treatment for the equipment cooling. In recirculating system same water re-circulate again and again and some make water is added for evaporation losses. The outflow from the toilets of the plant buildings shall be led to various septic tanks in respective areas through separate drains and the run-off of them will be connected to sock pits/dispersion trenches. Out of the total water requirement of 320 KLD for the existing as well as proposed plants only 133.3 KLD waste water will be generated

Solid Waste Generation

The solid waste generation in the proposed plant is given in following table

Solid Waste Generation & Mitigation Measures

Sr. No.	Solid waste	Source	Quantity TPA	Utilization / Disposal
1.	Ferro / Silico Manganese Slag	Ferro Alloys Plant	13800	100% Ferro manganese slag will be used in Plant for production of Silico manganese. In case silico manganese will be produced then the slag will be sold to brick plant & used for road making.

2	Runner Riser/ Foundry Return (considering DI casting)	Induction furnace	7490	100% re-used in the plant itself as a raw material.
3	Induction furnace Slag (Considering DI casting)	Induction furnace	526	For making of road and filling of low laying area in the premises and also sold to bricks / blocks manufacturing plant
4.	Ash Coal	Boiler	600	Will be sold to brick manufacturing plant
5.	Burnt Sand	Induction furnace	34	Will be sold to brick manufacturing plant.
6.	End cutting & Mill scale	Rolling mill	91	End cutting will be recycled back in the Induction furnace and Mill scale will be sold in the market.
7.	Tar	Gasifier	60	It will be sold to authorized vendor in the market.
8.	Ash & cinder	Gasifier	1480	Will be sold to brick manufacturing plant.
7	Tailings	Iron ore washing plant.	150000	Tailings will be sold to cement plant in the surrounding area.

ENVIRONMENT MONITORING PROGRAMME

Environmental monitoring will be conducted on regular basis by of M/s Eathstahl and Alloys Private Limited through MoEF Recognized Laboratory to assess the pollution level in the proposed plant. Therefore, regular monitoring program of the environmental parameters is essential to take into account the environmental pollutant of the study area.

The objective of monitoring is:

- To verify the result of the impact assessment study in particular with regards to new developments;
- To follow the trend of parameters which have been identified as pollutants;
- To check or assess the efficiency of the controlling measures;

- To ensure that new parameters, other than those identified in the impact assessment study, do not become critical due to the commissioning of proposed facilities;
- To check assumptions made with regard to the development and to detect deviations in order to initiate necessary measures;
- To establish a database for future Impact Assessment Studies for new projects.

The attributes, which needs regular monitoring, are specified below:

- Air quality
- Water and wastewater quality;
- Noise levels;
- Soil quality;
- Ecological preservation and afforestation; and
- Socio Economic aspects and community development

ENVIRONMENT MANAGEMENT PLAN

Air Environment

The sources of air pollution are raw material handling system, materials transportation, raw materials feeding to the operating equipments. The automatic process equipments will be employed for the raw material feeding system. Eight Stacks of height of 30 m (existing Three and proposed Five nos) and one stack of 40 m is proposed for proper dispersion of gases. The following Environmental Management Plan will be implemented to control air emissions from Induction Furnace.

Action Plan to Control of fumes

- The primary fume pick up from Induction Furnace will be by a canopy hood placed over the furnace and to convey the same single walled MS ducting will be employed.
- Bag Filters followed by a stack will be installed to induction furnace & gasifier.

- Fugitive emission from material unloading operations, material transfer points will be controlled fully with total enclosure.
- Fugitive as well 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 (PM10 100µg/m³, PM2.5 60µg/m³ SO₂ 80µg/m³, NO_x 80µg/m³ and CO 04µg/m³) prescribed by CPCB.
- The monitoring frequency of air quality shall be as per the consent issued by State Pollution Control Board and reports shall be submitted as part of compliance. The records will be maintained.
- Regular Stack Monitoring will be done. All the emissions from the plant will be controlled to meet the relevant standard set by CPCB/State Pollution Control Board
- Details regarding volumetric flow, temperature and emission rate of pollutants from different stacks shall be collected and compiled regularly
- Effective steps shall be taken to control fugitive emission inside the plant. All internal roads will be Tar Roads. Efficient arrangements will be provided to control fugitive dust emission during handling/transportation of Raw materials / finished product etc
- The emission from induction furnace area will be extracted and treated in a fume extraction system.
- Fumes will be evacuated directly from induction furnaces through hoods with swirling mechanism and ducting.
- Avenue plantation will be strengthen further to control fugitive emissions & gaseous pollutants to keep clean and healthy environment.

Noise Environment

- The industry will take care while procuring major noise generating machines/equipment to ensure that the manufactures have taken adequate measures to minimize generation of noise.
- The areas where noise levels are high will be partitioned off, noise levels will be minimized at the source, and noise reflection and transmission will be minimized.

- The workers working in the high noise areas will be provided with ear muffs/ear plugs.
- Acoustic laggings and silencers will be provided in equipment wherever necessary. Ventilation fans shall be installed in enclosed premises.
- Supply ducts and grills on the ventilation and air conditioning system will be suitably sized for minimum noise level.
- The silencers and mufflers of the individual machines shall be regularly checked
- The noise level shall not exceed the limit 75 dB (A) during the day time 70 dB (A) night time within the plant premises.
- Provision of insulating caps and lids at the exit of noise source and providing polystyrene, etc. as noise insulation material will be adopted. All the openings will be covered and partitions will be acoustically sealed.
- Avenue plantation around the plant area will reduce the noise level further. Training of personnel is recommended to generate awareness about damaging effects of high noise levels.

Water Environment

- During plant operation no waste water will be generated from Induction Furnace and furnace of Ferro Alloys .
- Close circuit system will be provided in cooling of billets and bar structures, here the water is evaporated in the process of cooling. Hence there will not be any waste water generation from the process and cooling in the proposed plant.
- The necessary design parameters and material of construction for cooling system including cooling towers will be selected in such a way that they are able to utilize water from the clarifier. Provision for oil/grease separators will be made to skim oil / grease, if any in the waste water. After skimming of the oil water will be stored in guard pond.
- Domestic waste will be disposed through packaged type STP.

Socio Economic Environment

M/s Earthstahl and Alloys Private Ltd. would aid in the overall social and economic development of the region. The plant will give employment to about direct and indirect employment to 188 people of local area. 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.

Occupational Safety & Health Management

M/s. Earthstahl and Alloys Private Ltd. will provide all necessary provisions under Factory Act. In addition a Safety committee will be formed and manned by equal participants from Management and Workers. All personal protect equipments like Safety shoes, helmet & uniform will be issued to each employee based on the nature of job involved. In case a person inhales fumes, he should be removed to fresh air and given oxygen through a mask for 30 minutes and if required cardiopulmonary resuscitation should be performed.