

Executive Summary

1.0 Introduction

M/S Jay Jagdamba Stainless Steel Ltd. has proposed expansion of M.S. Billets Plant of 1800 TPM to 10,000 TPM M.S./S.S./A.S. Ingots & Billets at Gut No.57,58 P-1,59,60,87,88 at Village - Abitghar, Taluka – Wada, Distt. – Thane (M.S.)

The purpose of this Environmental Impact Assessment (EIA) study is to provide information on the surroundings and the extent of environmental impact likely to arise on account of the proposed expansion activities.

The objectives of the EIA study are:

- To assess the present status (baseline) of air, water, land, noise, biological and socio-economic components of environment including parameters of human interest;
- To identify and quantify significant impacts of various activities of the generation of power
- To evaluate existing pollution controls measures and suggest modifications, if required;
- To prepare Environmental Management Plan (EMP) outlining control measures for mitigation of adverse impacts; and
- To delineate post project environmental quality monitoring program for management of emissions from the plant with increased capacity.
- To prepare risk assessment and disaster management plan.

SITE SELECTION CRITERIA

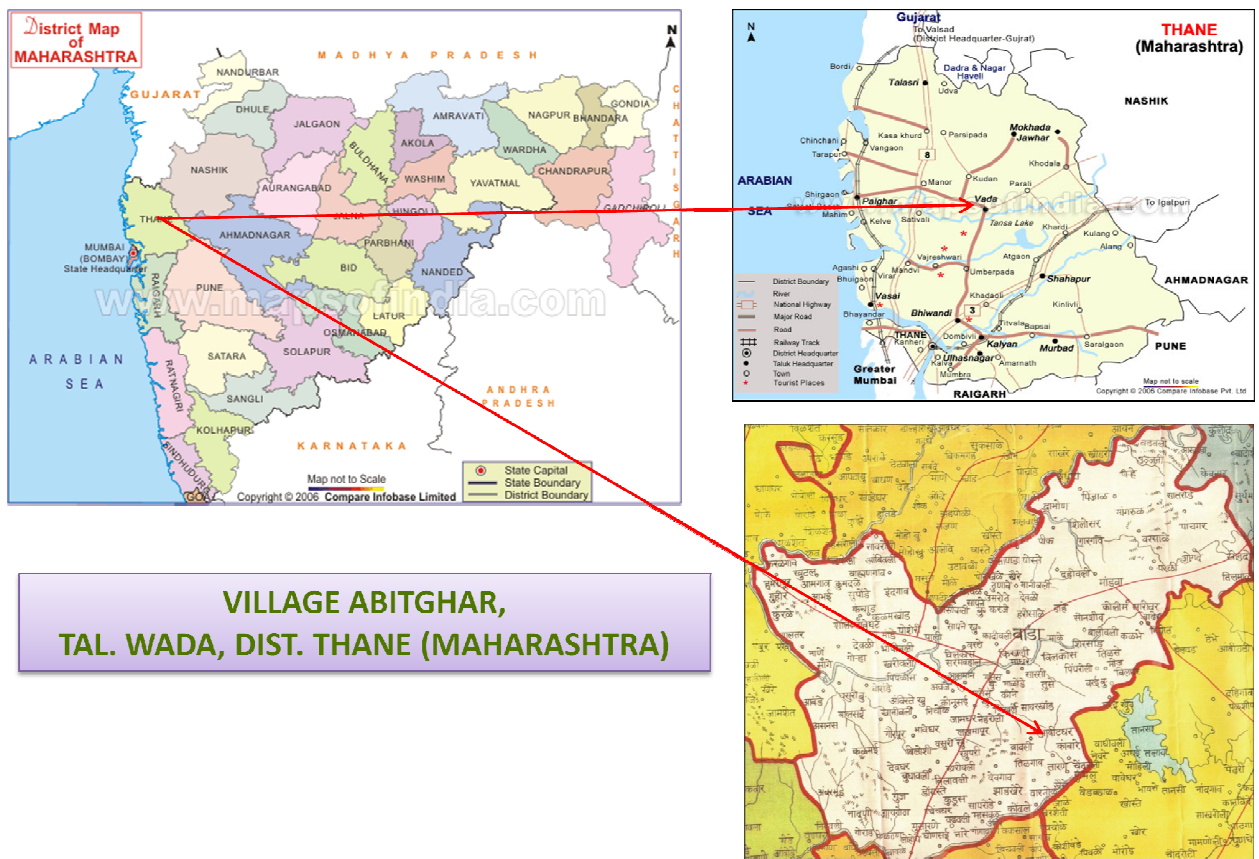
- Existing Plant in operation
- No Rehabilitation/Resettlement required.
- No archaeological monument, interstate boundary and defense installation.
- No notified critically polluted area.
- No nallah/water body, public roads, forests within the project site.
- Availability of Raw Material.

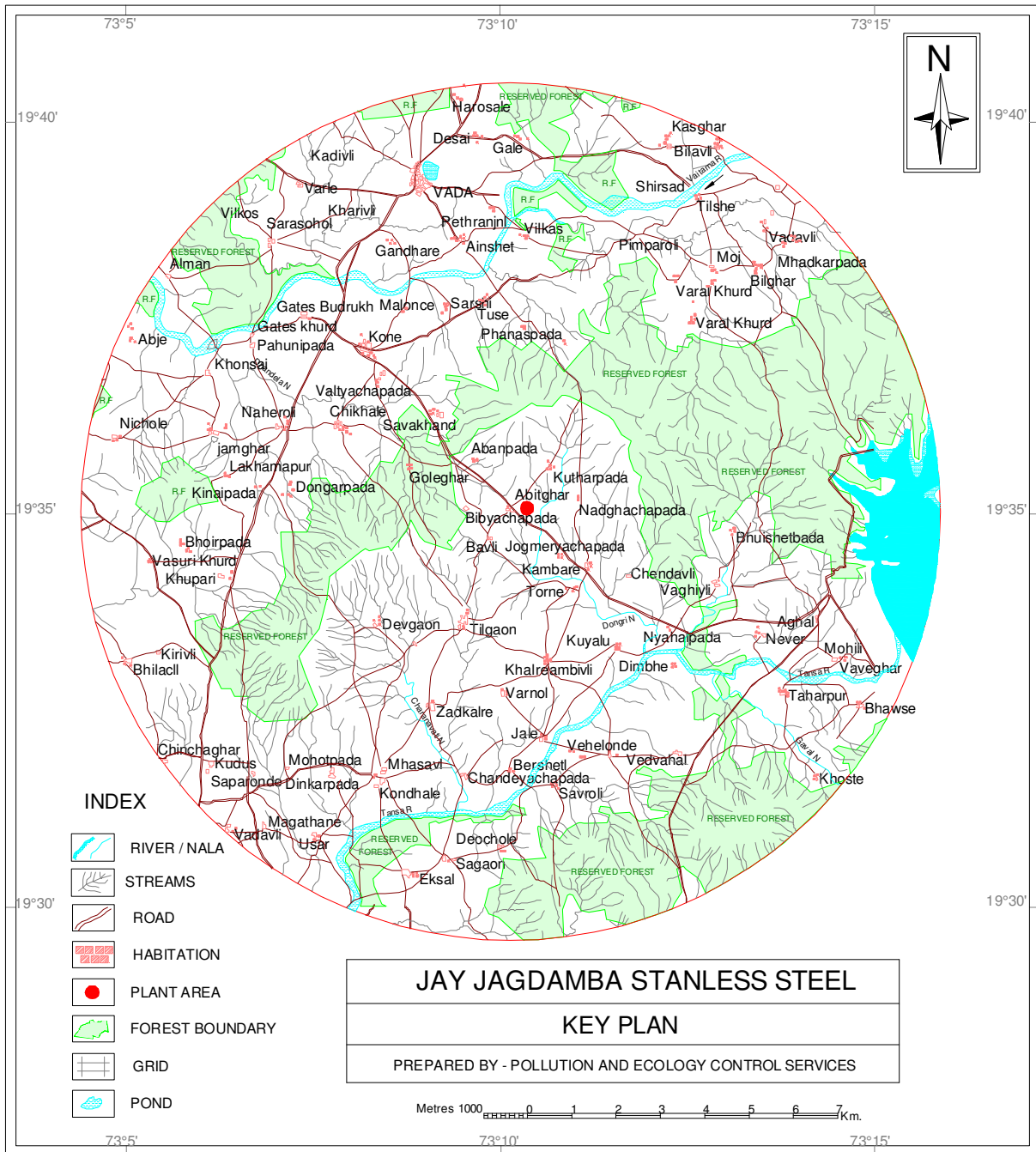
- Availability of Water (50 m³/Day) .Water harvesting for entire area is done.
- Assured Power Supply.
- Market available for finished products.
- Availability of man power.
- Availability of industrial infrastructure due to adjacent Notified Industrial Area.

DETAILS OF THE PROJECT SITE

Sr no	Particulars	Details
1	Project Site	Gut No. 57,58 P-1,59,60,87,88 at Village Abitghar, Taluka – Wada, Dist – Thane (M.S.)
2	Coordinates	Latitude : 19°35'4.32"N Longitude: 73° 9'47.30"E
3	Total project Area	10 Acres
4	Water Demand	50m ³ /day
5	Power requirement	17000 KVA Source – MSEB
6	Toposheet	47 E/3, 47E/6
7	Elevation above MSL	268 ft
8	Defence Installation	Nil
9	Nearest Airport/ Air Strip	Chatrapati Shivaji International Airport – 68 km
10	Nearest town	Wada 16 km
11	Water Bodies	Tansa River 6.0 km South East Vaitarna River 7.0 km North
12	Ecologically Sensitive Zones like wild life sanctuaries, national parks, defense Installation and biospheres	Nil

Location Map of the Project Area





PURPOSE OF EIA

As per the Environmental Impact Assessment (EIA) Notification dated 14th September 2006, the proposed ferroalloys manufacturing unit is categorized as Category – B under the Schedule 3(a) Metallurgical industries (ferrous & nonferrous), which mandates obtaining prior Environmental Clearance from SEAC , Maharashtra.

The application to prior EC (Form-1) for the proposed expansion project was submitted to SEAC for approval of Terms of Reference (TOR). The proposal was considered by the State Level Expert Appraisal Committee (SEAC) during its 67th meeting held on 25th to 27th February 2013 for the TOR for preparation of EIA report. The SEAC has suggested TOR for preparation of the EIA report and TOR compliance is in Table 1.2. The EIA report for M/S Jay Jagdamba Stainless Steel Ltd is prepared as per the guidelines of MoEF and contains 11 Chapters including Environmental Management Plan.

In order to obtain the required Environmental Clearances, M/s Pollution and Ecology Control Services (PECS) Nagpur have been entrusted the task of undertaking Environmental Impact Assessment (EIA) study and prepare Environmental Impact Assessment report. This EIA report is prepared based on the data and information provided by the Proponent and the field studies undertaken by PECS during the period of 6th March 2013 to 7th June 2013.

2.0 PROCOESS DETAILS

The proposal pertains to installation of unit of M.S. Billets Plant of 1800 TPM to 10,000 TPM M.S /S.S/A.S. Ingots & Billets

Production Capacity

SR.NO.	NAME OF UNITS	Existing	Proposed	TOTAL
1	MS/SS/AS Ingots and Billets	1800TPM	8200 TPM	10000 TPM

The utility requirement for the proposed expansion project is given in following Table

Utility Requirement

Sr. No.	ITEM	QTY	
		PROPOSED	TOTAL
1.	Power	17000 KVA	17000 KVA
3.	Water	50m ³ /day	50 m ³ /day
4.	Manpower	150	150

Raw Material Requirement

The raw materials required for proposed production are MS/SS/AS scrap, Sponge Iron and ferroalloys is given in following Table

RAW MATERIAL REQUIRED

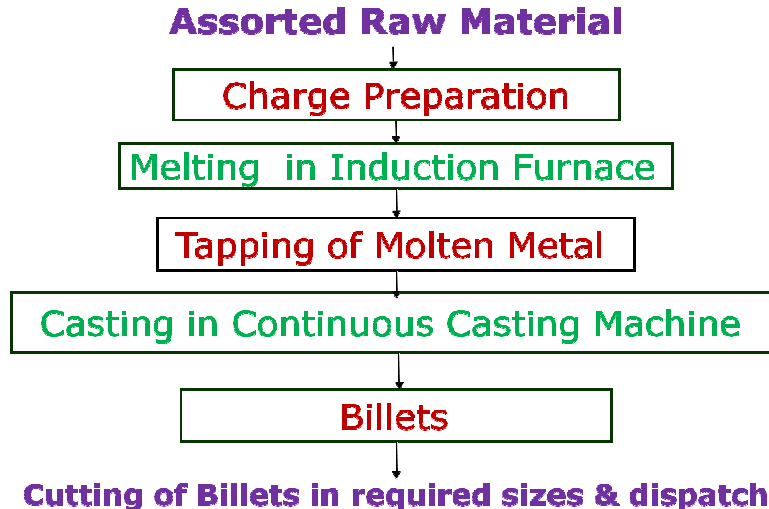
Sr. No.	Name of the Raw Material	Quantity (T/Annum)
1.	M.S./S.S./A.S. Scrap	1,20,000 T
2.	Ferro alloys	10,000 T
3.	Sponge Iron	15,000 T

- The total water required for the proposed expansion plant will be 50m³/day. The source of water will be met from captive ground water.
- The power required for the proposed expansion project 17000 KVA. The power requirement will be met from MSEB.
- Shree Jai Jagdamba stainless steel plant have procured 10 Acres of land in which 33% of the plot area have been identified for green belt.

Process

Various steps involved in manufacture of MS Billet/Ingots are as under

- Collection, Segregation, processing and stocking of M.S. Scrap and Sponge Iron
- Preparation of the burden for the Induction Furnace and charging the same.
- Melting and refining the charge in Furnace
- Tapping, Pouring and continuous casting of the molten metal and production of Billet
- Cutting Billet to a specific size
- Visual Testing and Sample testing of lot for chemical specification
- Storage and Dispatch.

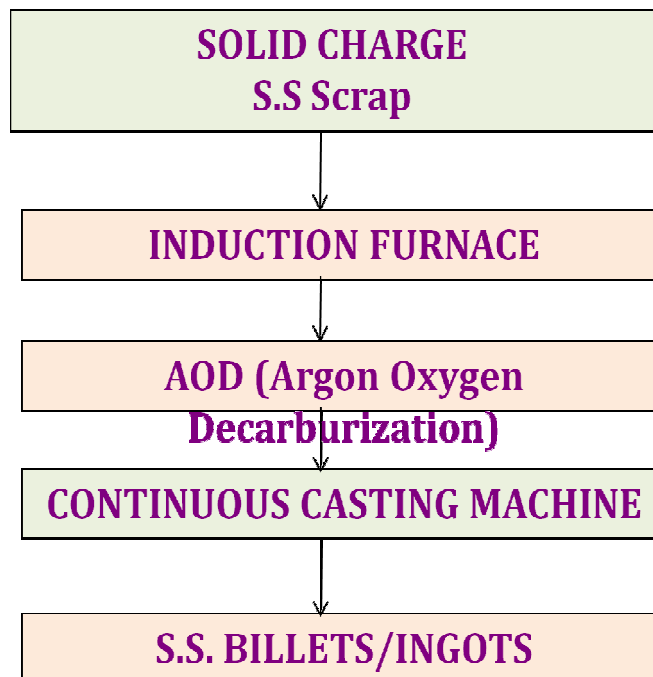


The sequence of operations for different steel grades are as follows:

- S.S. Scrap melting in furnace.
- Pouring molten metal in transfer ladle.
- Molten Metal transfer to AOD converter vessel for decarburization
- Decarburization in AOD converter vessel

- Reduction of steel
- De slaging
- Pour in ladle for casting
- Cutting Billet to a specific size
- Storage and Dispatch.

The process flow sheet is presented in the following figure



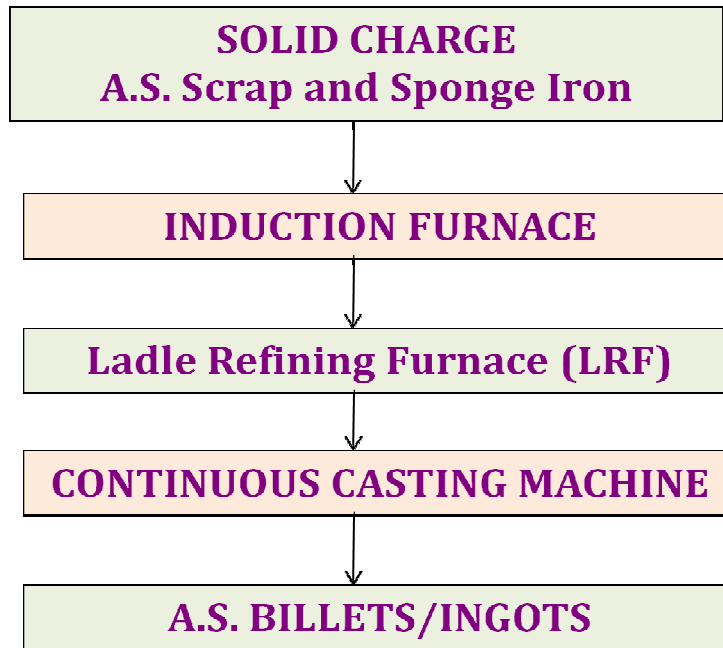
Process Flow chart for S.S. Billets

The sequence of operations for different steel grades are as follows:

- A.S. Scrap and Sponge Iron melting in furnace.
- The liquid metal is transferred to a ladle refining furnace with slide gate arrangement.
- The ladle is placed on a trolley brought to the station. It has water cooled or brick lined roof and three electrodes connected to the power source.
- Argon is purged through the ladle bottom
- Pour in ladle for casting
- Cutting Billet to a specific size

- Storage and Dispatch.

The process flow chart is given in following figure



Process Flow chart for A.S. Billets

3.0 DESCRIPTION OF ENVIRONMENT

The baseline environmental quality for the period of March, April, May & June – 2013 was assessed in an area of 10 km radius around the proposed project site.

Air Environment

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

PM ₁₀	:	29.7 µg/m ³ - 43.7 µg/m ³
PM _{2.5}	:	14.2 µg/m ³ - 21.3 µg/m ³
SO ₂	:	6.3 µg/m ³ - 13.2 µg/m ³
NO _x	:	8.1 µg/m ³ - 18.7 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 7 samples including three surface & four 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

It has found that in the proposed plant expansion, noise levels are in the range of 36.0 – 56.8 dB(A) at all eight stations. Maximum levels of noise have recorded in day hours which are natural as our most of activities have done in day hours.

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

Two 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 texture of soil sample collected from agriculture land and waste land are loam at all the two depths. Loams are the medium-textured soils which are favorable for production, due to their high available retention of water and exchangeable nutrients. There is no variation at all two selected depths thereby indicating homogeneity for the selected soil zone.
- The soil samples from agriculture field and waste land are red in colour, which indicate the presence of reduced Iron compounds (Fe^{2+}).
- The bulk density of all soil samples at two selected depths was in the range of 1.3 to 1.38 g/cm^3 indicating clay - loam type.
- The moisture of the soil samples collected ranged from 12.0 to 17.0 %. Higher moisture is observed in agriculture soils indicating watering during farming. The water holding capacity range 29 to 37% indicating favourable conditions for agriculture.
- The soil samples from agriculture field have pH values in the range between 6.6 & 6.9 indicating acidic nature. The samples from waste land have pH range from 6.1 to 6.2 indicating acidic nature of soil. The pH of agriculture soil sample requires marginal lime supplement for cultivation of crops.
- The soil samples from agriculture field have conductivity in the range between $80 \text{ }\mu\text{mhos/cm}$ and $100 \text{ }\mu\text{mhos/cm}$. However, conductivities of soil samples from waste land ranged between 140 to $150 \text{ }\mu\text{mhos/cm}$.
- Samples collected from agriculture land have Organic Matter between 0.62 and 0.88 % range. Whereas samples collected from waste land has higher organic matter ranged between 2.33 -2.439%. The values for agriculture land represent the soil condition after the harvest of crops which might have resulted in reduced organic matter content. Waste land is rich in organic matter.
- Soil samples collected from agriculture lands show concentration of total Nitrogen as its values has ranged between 252.0 to 357 kg/ha indicates well to sufficient nitrogen. The samples collected from waste land have total nitrogen in the range of 945 to 987 kg/ha indicating very high values than agriculture land.

- Soil samples from agriculture lands have medium to sufficient concentrations of available phosphorous as its values are ranged between 48.0 to 51.5 kg/ha. Soil sample from waste land has concentration values between 51 to 62 kg/ha.
- Potassium availability is medium in agriculture land which ranged between 67 to 94.0 kg/ha. The samples from waste land has higher potassium concentration and the values ranged between 170 to 174 kg/ha.. Waste land is rich in potassium similar to phosphorus, nitrogen and organic matter content.

All soil samples are moderately suitable for cultivation of climatic crops and have good fertility.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact on Air Quality

The operation phase of plant which generates dust, and it will disperse into the work zone atmosphere and plant surroundings. To control the dispersion of fugitive dust, from the place of transfer points, Storage yard will be provided with dust extraction system consist of hoods, hot ducting, gas cooler, bag house ID fans and exhaust stack. The dust extraction system brings down the particulate matter concentration in the exhaust air to approximately 50 mg/Nm³. The dispersion of pollutants in the atmosphere is a function of several meteorological parameters viz. temperature, wind speed and direction, mixing depths, inversion level, etc. A number of models have been developed for the prediction of pollutant concentration at any point from an emitting source. The AERMOD dispersion model is a steady-state Gaussian plume model. It is most widely accepted for its interpretability. It gives reasonably correct values because this obeys the equation of continuity and it also takes care of diffusion, which is a random process. For the present study, this model is used for the prediction of maximum ground level concentration (GLC). The air pollution caused by the gaseous emissions from a single or small group of stacks is a local phenomenon. Its impact will occur at a distance ranging from within the immediate vicinity of the stack to several kilometers away from the stack. Maximum ground level concentration will occur within this range. All plumes at more downwind distances from the source by stack emission become diluted by diffusion in the ambient atmosphere, that concentrations of pollutants become negligible.

Mitigation Measures

- ❖ Venturi scrubbers will be provided for the extraction of dust particles. The continuous casting operation is selected for the production of billets in induction furnace, where there is less attack on refractory lining, the changing need drastically comes down by 87%. This process results in the low gases emission.
- ❖ Installation of Venturi Scrubber followed by Stack.

Water Environment

The makeup water requirement of the proposed plant is 50 KLD. The water will be mainly used for furnace cooling purpose and domestic purpose only.

The makeup water is supplied for cooling tower to generate cooled water for billets cooling. Sewage generated from domestic activities will be treated in the septic tank followed by soak pit. Treated water will be fully utilized for green belt development.

Noise Environment

Noise levels generated in the project site will be confined to the noise generating plant units hence the impact of noise levels on surroundings will be insignificant.

Noise levels will be attenuated by providing encasement of noise generating equipment, noise proof cabins to operators, noise generating sources will be insulated by providing suitable enclosures, Inlet and outlet mufflers will be provided which are easy to design and construct and all the rotating items will be well lubricated.

Solid Waste

Solid waste generation is slag 3600 TPA, which will be send for land filling and Bricks making.

Socio Economic Environment

The proposed steel plant will generate employment opportunities for both skilled and unskilled workers living in the area. This will produce multiple effects on the life and economy of the local people. Not only has the income of the local residents increased but also their social status, which will improve to a great extent. Thus from socio-economic point of view the project is beneficial to the people and can be executed with no

hesitation. The project will provide ample employment opportunities to local people to get employed. This will uplift the socioeconomic status of the people living in the area.

The impacts of the proposed plant on socio economic conditions of the local people of the study area are expected to be positive.

The local population will have employment opportunities due to the proposed Project.

The local people will be preferred in the proposed Project.

- ❖ Benefits due to the civil construction and transportation companies to the local people.
- ❖ Local people shall be given preference for employment depending on their qualification
- ❖ All the applicable guidelines under the relevant Acts and Rules related to labour welfare and safety shall be implemented;

5.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental monitoring will be conducted on regular basis by M/s Jay Jagdamba Stainless Steel Ltd to assess the pollution level in the proposed plant as well in the surrounding area. The objective of monitoring is:

- To verify the result of the impact assessment study in particular with regards to new developments;
- To check or assess the efficiency of the controlling measures;
- 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

Environmental Budget

The total cost of the project will be Rs. 20.0 Crores. The budgetary provision for EMP will be as Rs 1.0 Crores.

6.0 ENVIRONMENTAL 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. Stacks of adequate height of 42 m is proposed for proper dispersion of flue gases from induction furnaces. 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.
- Wet Scrubber followed by a stack will be installed to induction furnace.
- 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 (PM_{10} 100 $\mu g/m^3$, $PM_{2.5}$ 60 $\mu g/m^3$, SO_2 80 $\mu g/m^3$, NO_x 80 $\mu g/m^3$ and CO 04 $\mu g/m^3$) 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 the wastewater generated from scrubbers and cooling purpose will be reused in the process.
- 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 Septic Tanks along with soak pits.

Management Plan of Solid waste

- Process needs refractory lining and is being changed every month.
- Solid waste of slag generation will be about 3600 TPA.
- Solid waste is non hazardous and non-toxic in nature.
- Slag generated will be used for village road constructions.
- Solid waste will be use for land filling.

Socio Economic Environment

M/s. Jay Jagdamba Stainless Steel Ltd would aid in the overall social and economic development of the region. The plant will give employment to about 150 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.