

Executive Summary

of

***Proposed expansion in production capacity of
M.S. Billets from 23,100 TPA to 1, 45,200 TPA;
TMT Bars/Finished Products from 60,000 TPA to
1, 44,000 TPA; M.S. Pipes from 30,000 TPA to
96,000 TPA***

Proponent

***M/s. Diwanka Energy Private Limited
At Plot no. 149,150,151, Village: Lapka, Tehsil: Mouda, Nagpur, Maharashtra***

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

Executive Summary

PREAMBLE

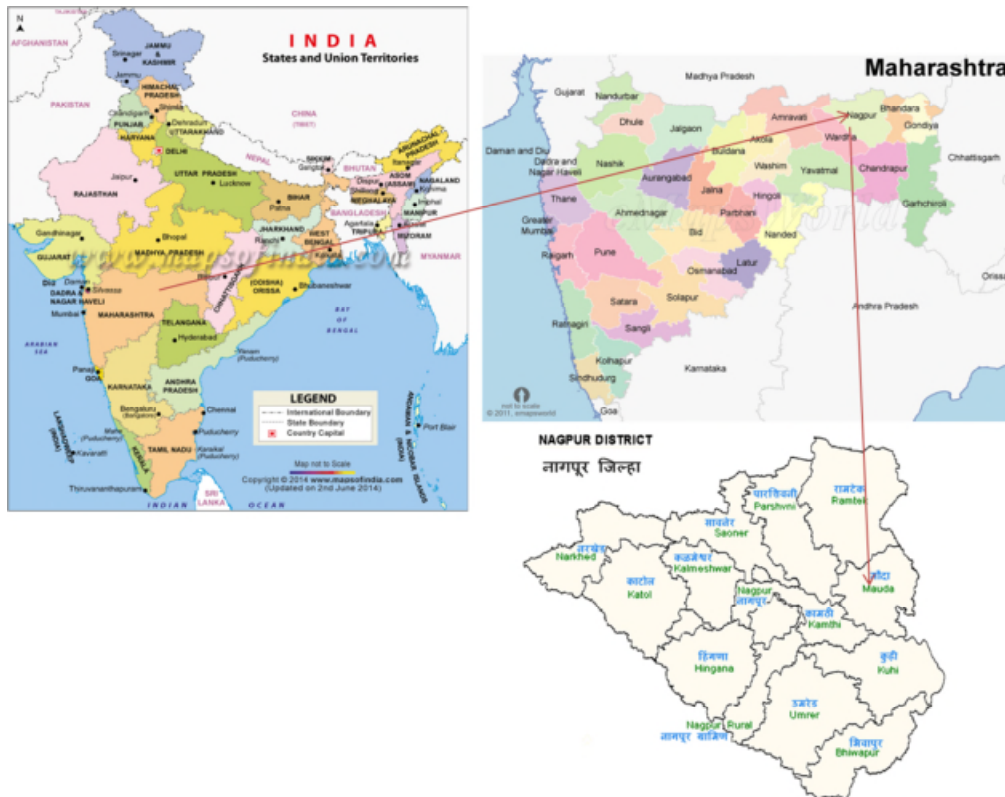
The iron and steel industry is one of the most important industries in India. During 2014 through 2015, India was the third largest producer of raw steel and the largest producer of sponge iron in the world. The industry produced 91.46 million tons of total finished steel and 9.7 million tons of pig iron. Most iron and steel in India is produced from iron ore. In 2014-15, production for sale of total finished steel (alloy + non-alloy) was 91.46 Million Tonnes, a growth of 4.3% over 2013-14. Production for sale of Pig Iron in 2014-15 was 9.7 million tonnes, a growth of 22% over 2013-14. India is the largest producer of sponge iron in the world with the coal-based route accounting for 90% of total sponge iron production in the country.

Source: <https://en.wikipedia.org>

TABLE: DETAILS OF THE PROJECT SITE (10km RADIUS)

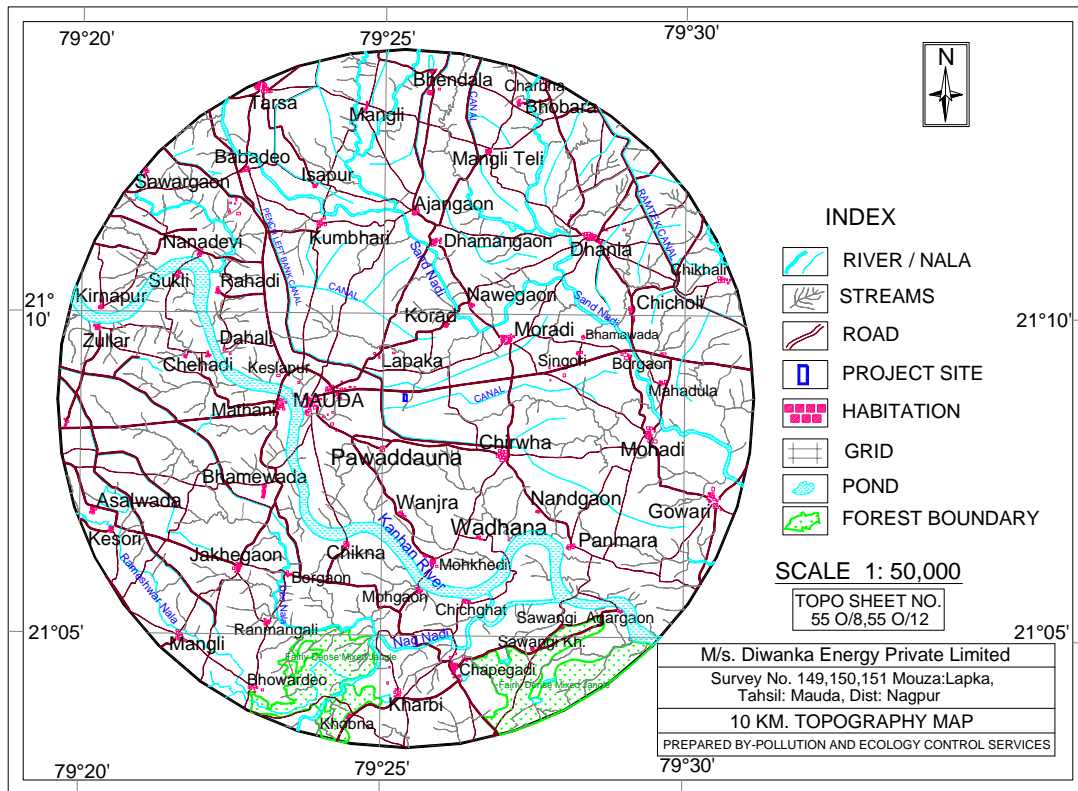
Sr No	Particulars	Details
1	Project Site	Plot no. 149,150,151, Village: Lapka, Tehsil: Mouda, Nagpur .
2	Latitude	21° 8'43.49"N
3	Longitude	79°25'14.46"E
4	Elevation above MSL	269 m
5	Toposheet	55 O/8, 55 O/12
6	Present landuse	Industrial land
7	Climatic conditions (Based on nearest IMD station data Nagpur)	Annual Average Maximum Temp : 47 ⁰ C Annual Average Minimum Temp : 10 ⁰ C Annual Average Rainfall : 800 - 900 mm Annual Average Humidity : 44- 60%
8	Nearest National Highway/State Highway	NH 6 : 0.5 km N
9	Nearest Airport/ Air Strip	Nagpur Airport: 39 Kms
10	Nearest town	Mouda : 2.5 Kms
11	Forest	Dense Mixed Jungle – 7.0 km SW Dense Mixed Jungle – 7.5 km SE

12	Ecologically Sensitive Zones like wild life sanctuaries, national parks and biospheres	No
13	Water Bodies	Kanhani River – 3 km W Sand Nadi – 3 km NE Deo Nala – 5 km SW Nag Nadi – 6.5 km SE



Source: mapsofindia.com

Location Map of the Proposed Project Site



Source: SOI Toposheet

Topographical Map (10 km Radius)

PROCESS DETAILS

M.S. Billets

The company will manufacture M.S. Billets by using sponge Iron and scrap as raw materials. Silicon & manganese are added as alloying elements using medium frequency induction furnace and continues casting technology.

In the Induction Melting Furnace where the iron melts at a temperature of about 1650⁰C. When the total charge gets melted into hot liquid metal then the metallurgy of steel in terms of carbon, phosphorous content, alloy elements etc is controlled. Based upon the composition of the molten steel, additives like Silico, Manganese will be added to get the requisite composition and grade of steel. For production of billets the molten material is poured into a ladle and then transported to Continuous Casting machine with the help of overhead cranes. The ladle is placed over the Continuous Casting machine to cast the molten steel into required size of ingots/billets. This is an automatic machine, which is

totally programmed to cut the Billets once the pre set value is reached. The Cut Billets are transported by a handling crane and stored in the Storage yard as per the Grade and Quality for dispatch. The hot gases from the Furnace are being handled by special dedusting equipment followed by Wet scrubber before it is let out to atmosphere through a Self Supported Chimney.

Rolling Mill & Tube Mill

Rolling mill: Hot billets will be directly transferred to rolling mill in which M.S. Strips of various sizes will be made in the form of coils.

Tube mill: Strips are shifted into the tube mills for making the various sizes pipes in various shapes like square, round, hexagon, triangle etc and in various sizes like 1.2mm, 1.5mm, 1.8mm 2mm and 2.2mm.

DESCRIPTION OF ENVIRONMENT

Air Environment

The baseline environmental quality for the Septemeber, October, November and December 2017 was assessed in an area of 10 km radius around the proposed project site.

During the study period, the wind speed measured at the site varied from 1.0 to 11.1 kmph. The predominant wind directions are from N and NE.

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

PM ₁₀	-	38.5 to 60.6 µg/m ³ .
PM _{2.5}	-	18.9 to 38.4 µg/m ³
SO ₂	-	6.7 to 25.6 µg/m ³
NO _x	-	10.9 to 35.7 µg/m ³

Industrial Area				
Residential, Rural Area (CPCB Norms)	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 8 samples including four 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 (IS 10500 – 1993 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

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 all soil samples are loam and silt loam in Texture Classification.

- b) Colour of soil samples from agriculture land is light gray to gray and sample from waste land is light gray in colour.
- c) The bulk density of soil samples from agriculture land is in the range of 1.82gm/cc to 1.86 gm/cc for sample S2 and 1.79gm/cc to 1.83 gm/cc for sample S3 and sample from waste land is of 1.63 gm/cc to 1.78gm/cc.
- d) Soil samples from agriculture land have pH values between 7.4 to 7.8 and sample from waste land have 7.11 to 7.22 ranges of pH values. The pH values are indicating nature of soil samples as between slightly neutral to slightly alkaline.
- e) Soil samples from agriculture land have conductivities between 0.115mmhos/cm to 0.444 mmhos/cm however; conductivity of soil sample from waste land ranges between 0.312 mmhos/cm to 0.429 mmhos/cm.
- f) Soil samples from agriculture land have Organic Matter between 0.97 % to 1.89% and sample from waste land have between 0.98% to 2.48% Organic Matter. These values represent average fertility of soils.
- g) Soil samples from agriculture land have concentration of Available Nitrogen values ranged between 392.52 kg/ha to 765.42 kg/ha and samples from waste land have range between 852 kg/ha to 1412 kg/ha available Nitrogen value.
- h) Soil sample from waste land have concentration of Available Phosphorous values ranged between 54.52 kg/ha to 66.35 kg/ha, soil samples from agriculture land have concentration of Available phosphorous as its values are 48.01 kg/ha to 264.69 kg/ha.
- i) Soil sample from agriculture lands have concentration of Available Potassium values range between 362.3 kg/ha to 936.4 kg/ha, it have good concentration of available Potassium, whereas sample from waste land have concentration of Available Potassium values range between 134.5 kg/ha to 216.2 kg/ha.
- j) Characteristic of waste land soil is a little deficient in nutrients concentration. Whereas, agricultural land soil is 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 pollutant 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.

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. Raw materials will be fed to hopper with the help of pay-loader / tipper.

Mitigation Measures

M/s. Diwanka Energy Pvt. Ltd. shall provide dust suction system which will control fugitive emission due to 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. The entire length of conveyors is covered to prevent dust pollution. All bins are totally packed and covered so that there is no chance of dust leakage. All discharge and feed points wherever the possibility of dust generation is there is provided with dust suppression system. All material transfer points are connected with dust suppression water nozzles to avoid air pollution.

Wet scrubbers/ Bag Filters 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.

Mitigation Measures

- Installation of Wet Scrubber/Bag Filters followed by Stack of 30m height.

- The particulate matters and air borne metallic particles are generated from the transfer of molten steel to the mold and from the cutting of the product by oxy-fuel torches during continuous casting.
- Exhaust should be fitted to filters and other relevant abatement equipment, especially in the casting and finishing shops, wherever it is applicable.

Prediction of Air quality

Ground Level Concentration (GLC) of SPM has been calculated for multi-stack dispersion modelling using double Gaussian diffusion equation : IS 8829-1978 and as per 'Assessment of Impact to Air Environment : Guidelines for Conducting Air Quality Modelling' by CPCB, Delhi, (PROBES/70/1997-98). The predicted values in respect to PM₁₀, and NO_x were found to be below the Ambient Air Quality Standard of CPCB.

Impact on Water Environment

Operation phase

The total water requirement for the proposed activities is 170 m³/day. The waste water generated from cooling activities and air pollution control devices will be treated in settling tank and reused in process. The sewage generated from the toilets and bathroom of the proposed facility will be 12m³/day which will be treated in packaged type STP of 15 KLD.

Impact on Noise Environment

Operation phase

During operation, the major noise generating sources are crushing mill, auto loading section, electric motors 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 to the noise generating plant units hence the impact of noise levels on surroundings will be insignificant.

Mitigation Measures

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

- ❖ By providing padding at various locations to avoid sharp noise due to vibration.
- ❖ 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 Terrestrial ecology

The reserved forest in the study area is in patches. There is no designated ecological park or Bio Reserve/Wild life sanctuary in the 10 km radius of the proposed plant site. The impact on terrestrial ecology will be negligible and shall be insignificant.

SOLID WASTE

Operation phase

The solid waste generation in the proposed activities is given in following Table

Solid Waste Generation & Mitigation Measures

Sr. No	Waste	Existing Quantity TPA	Proposed Increase TPA	Total After Expansion TPA	Disposal
1	Slag	924	4884	5808	Hardening of working area, internal road and cement, brick manufacturers, concreting. Possibilities are being explored to use this slag for making internal village roads.
2	Tail Cuttings	900	3420	4320	100 % Reused in Induction Furnace
3	Fly Ash	-	4200	4200	Fly ash will be sold to brick manufacturer.

SOCIO-ECONOMIC ENVIRONMENT

Operation phase

The impacts of the proposed project, during its operation, on demography and socio-economic condition can be identified as follows.

- Negative impacts can be depletion of natural resources like water and land, depletion in air quality if proper mitigative measures are not taken.
- Increase in employment opportunities and Reduction in migrants to outside for employment.
- Growth in service sectors.

- During operation phase 340 - 350 technical and nontechnical people will be employed.
- Increase in consumer prices of indigenous produce and services, land prices, house rent rates and Labour prices.
- Improvement in socio-economic environment of the study area.
- Improvement in transport, communication, health and educational services.
- Increase in employment due to increased business, trade commerce and service sector.
- The overall impact on the socio economic environment will be significant.

The management of M/s Diwanka Energy Pvt. Ltd has proposed to give preference to local people for recruitment in semi skilled and unskilled categories.

ENVIRONMENT MONITORING PROGRAMME

The environmental monitoring is important to assess performance of pollution control equipment installed in the expansion project of M/s. Diwanka Energy Private Limited. The proposed project is expansion of M.S. Billets from 23,100 TPA to 1,45,200 TPA; TMT Bars/ Finished Products from 60,000 TPA to 1,44,000 TPA; M.S. Pipes 30,000 TPA to 96,000 TPA at Plot no. 149,150,151, Village: Lapka, Tehsil: Mouda, Nagpur, Maharashtra. The sampling and analysis of environmental attributes including monitoring locations will be as per the guidelines of the Central Pollution Control Board/ State Pollution Control Board.

Environmental monitoring will be conducted on regular basis by M/s. Diwanka Energy Private Limited to assess the pollution level in the proposed plant as well in the surrounding area. 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 critical;
- 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. Stacks of adequate height of 30 m is proposed for proper dispersion of flue gases. The following Environmental Management Plan will be implemented to control air emissions.

Action Plan to Control and Monitor Secondary Fugitive Emissions from all the Sources

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 duct will be employed.

- Installation of Wet Scrubber and Bag Filters followed by a stack.
- 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} $100\mu\text{g}/\text{m}^3$, $PM_{2.5}$ $60\mu\text{g}/\text{m}^3$ 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.
- 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 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
- During melting process gases/fumes generated are removed by pollution controlling system (Wet scrubber) on each of running furnace.
- 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 strengthening further to control fugitive emissions & gaseous pollutants to keep clean and healthy environment.
- 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.

Water Environment

During plant operation no waste water will be generated from M.S. Billets, TMT Bars and Pipes as the water is being used for cooling the products which will be evaporated and condensed, water if generated will be recycled. 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 proposed Packaged Type STP.

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.

- 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.

Land Environment

The main objective of the green belt is to provide a buffer between the sources of pollution and the surrounding areas. More than 30 % of the plot area will be developed as green belt of mixed tree species (local varieties). These plants will be provided regards to protect from animal grazing.

The green belt helps to capture the fugitive emissions and attenuate the noise apart from improving the aesthetics quality of the region. A 35 – 50 m wide greenbelt will be developed along the periphery of the plant. Avenue plantation will also be developed as per the standard norms. Approximately 1600 trees per Ha will be planted in consultation with the local Forest Department.

The general guidelines for development of greenbelt will be as follows:

- Trees growing up to 5 m or more will be planted along the plant premises and along the road sides
- Planting of trees will be undertaken in rows.
- Open areas inside the plant boundary will be covered with grass lawns.
- Planting of trees in each row will be in staggered orientation.
- Shrubs and trees will be planted in encircling rows around the project site.
- The short trees (<10 m height) will be planted in the first two rows (towards plant side) of the green belt. The tall trees (>10 m height) will be planted in the outer three rows (away from plant side).

Management Plan of Solid waste

- Process needs refractory lining and is being changed every month.
- Solid waste of slag generation after expansion will be about 5808 TPA and tail cuttings will be 4320 TPA.
- Fly Ash generation will be 4200 TPA.

- Solid waste is non hazardous and non-toxic in nature.
- Solid waste is stored in slag store; the floor of store is well concreted to prevent leachate formation.
- Solid waste will be use for land filled, hardening of internal roads, working area, concreting in own premises.
- Tail Cuttings will be 100 % Reused in Induction Furnace
- Fly ash will be sold to brick manufacturer.

SOCIO-ECONOMIC ENVIRONMENT

The project proponent would aid in the overall social and economic development of the region. The plant will give employment to about 340 - 350 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

Project proponent 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

CO, he should be removed to fresh air and given mediated oxygen through a mask for 30 minutes and if required cardiopulmonary resuscitation should be performed.