EXECUTIVE SUMMARY

of

INSTALLATION OF 190 TPD SPONGE IRON PLANT, 4 MW WHRB CAPTIVE POWER PLANT AND 90,000 TPA IRON ORE BENEFICIATION PLANT.

At MIDC Konsari, Village: Konsari, Tahsil: Chamorshi, Dist: Gadchiroli, Maharashtra

Project Proponent:

M/s. Lloyds Metals and Energy Limited

Prepared By

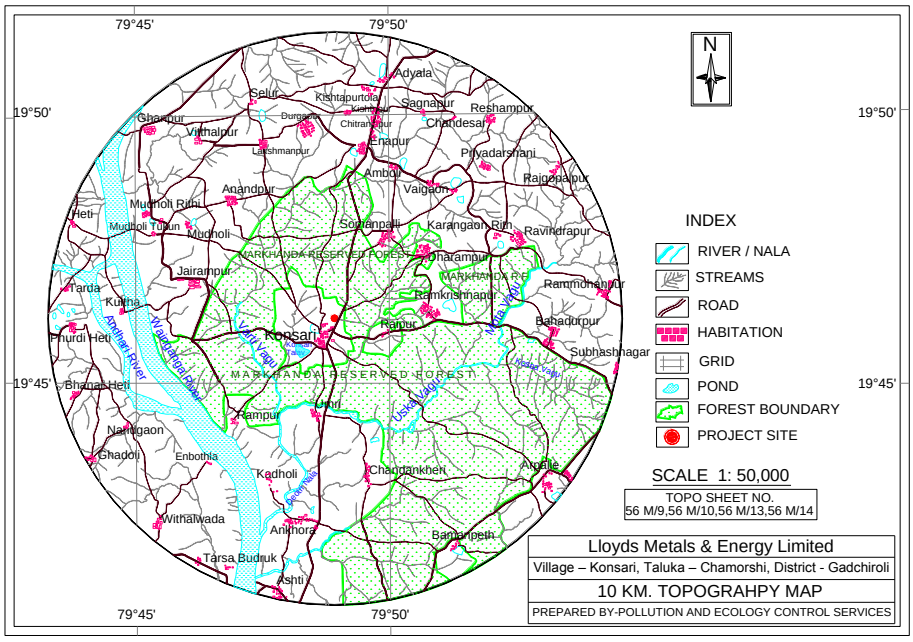
Pollution & Ecology Control Services
Dhantoli, Nagpur.

NABET No. : QCI/NABET/EIA/1720/RA0101

EXECUTIVE SUMMARY

INTRODUCTION

The iron and steel industry is one of the most important industries in India. During 2014 through 2016, 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 raw iron. Most iron and steel in India is produced from iron ore. The Indian Ministry of Steel is concerned with: the coordination and planning of the growth and development of the iron and steel industry in the country, both in the public and private sectors; formulation of policies with respect to production, pricing, distribution, import and export of iron and steel, ferro alloys and refractories; and the development of input industries relating to iron ore, manganese ore, chrome ore and refractories etc., required mainly by the steel industry. Presently LMEL is proposing the installation of new Sponge Iron plant along with CPP and Iron Ore Beneficiation plant at MIDC Konsari, Village Konsari, Tahsil Chamorshi, District Gadchiroli, Maharashtra.



Source: SOI Toposheet

Figure: 10 Km Study Area of Project Site

DESCRIPTION OF PROCESS

Sponge Iron Plant

The coal based direct reduction process is more commercially viable and is currently in use in India. The main component in the flow sheet of these Rotary Kiln Systems are similar consisting of the solid feed system, the rotary kiln, a product cooler, screens, magnetic separators and gas cleaners, Coal based plants have the advantages of utilizing smaller mixed units, lumps iron as feed stock and abundant availability of non-coking coal. The process flow diagram of the sponge iron plant is as given in following Figure**.**

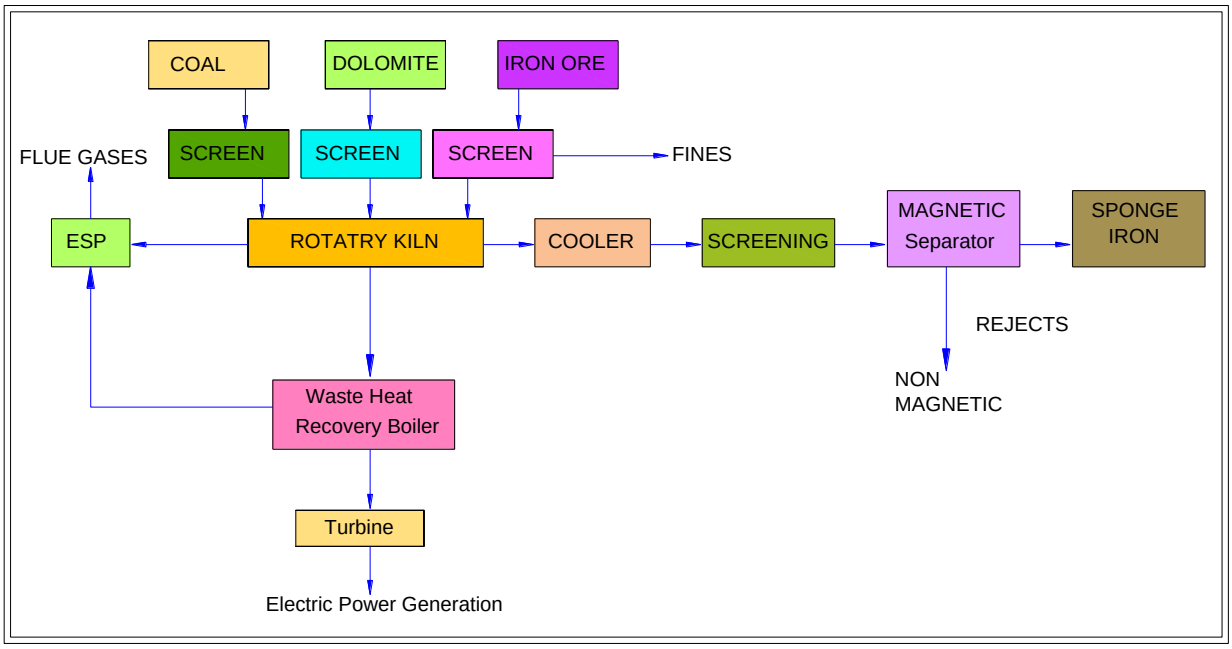


Figure: Sponge Iron Manufacturing Process

Iron Ore Beneficiation process.

The iron ore input is iron ore fines (-) 10 mm. The iron ore material is received in underground feed hopper. Iron ore is conveyed to 2 nos day bins. There is needle feeder below the day bins, which discharges the material onto another belt conveyor. This belt conveyor feed the material to one scrubber. Water is mixed with iron ore and loose clay particles are dislodged and come into slurry. Output of scrubber goes to a vibrating screen having 1 mm aperture. Screen coarse size particle are carried to the primary ball mill through a belt conveyor. Undersize particles from the screen are sent to de-sliming cyclones at 25µm. De-sliming cyclone underflow is mixed with primary ball mill output

and overflow is sent to tailing thickener. Output from primary ball mill is fed to sizing hydro-cyclone targeted at 300µm size. The underflow (+300µm) from this cyclone will route back to ball mill for further grinding and overflow (-3-00µm) will proceed for further beneficiation steps.

Sizing hydro-cyclone overflow will pass through de-sliming cyclone to prepare material (30% solids) for spiral circuit. Material with about 30% solids will pass to spiral circuit, where two products namely concentrate and tails will be generated. Spiral concentrate will have superior Fe grade of +63% Fe and will go to final grinding step. Spirals tails will go to a regrinding mill. The product of regrinding mill will be fed to magnetic separator circuit. Magnetic circuit concentrate will have +63% Fe grade and will go to final grinding step. Output of final grinding mill will be sent to the concentrate thickener. Tails generated from magnetic circuit will be sent to the tailing thickener.

Material from concentrate thickener will be filtered using pressure filter to product cake with about 8-10% moisture and will be stacked in the designated area for pellet manufacturing. Tails from tailing thickener will be sent to tailing filter to produce cake of about 15-17% moisture. These cakes will be stacked in demarcated open area inside the plant for a short time before shifting to an environmentally controlled adjoining area for storage for further use. Since the need to store tails will arise only after commissioning of the beneficiation circuit, The land is already in possession of LMEL and proper environment protection for water and air pollution will be taken by providing light vegetation cover on the dumps and providing a green belt around it.

Quantity of waste generated will be about 27000 tonnes maximum per annum.

The process flow chart for Iron Ore Beneficiation is given in **Figure**.

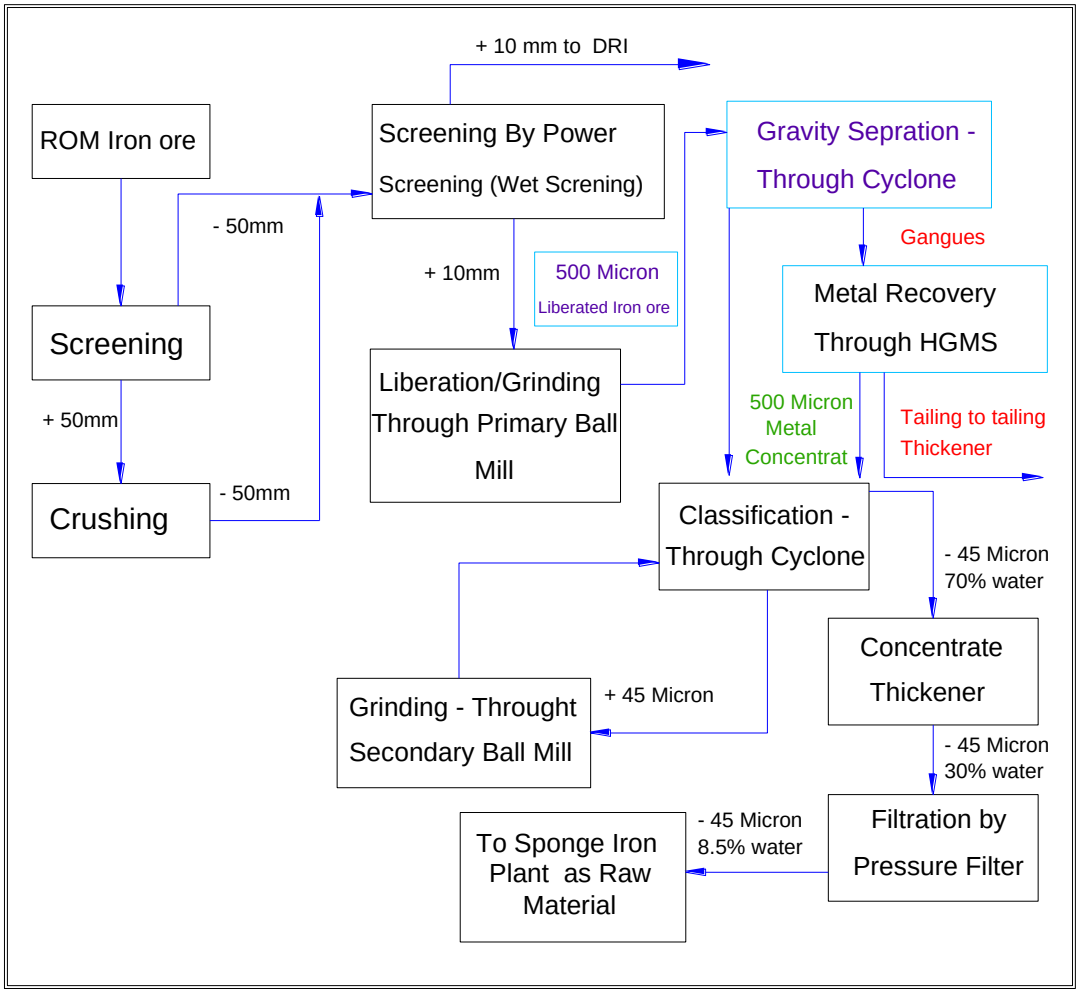


Figure: The Beneficiation of fine ore circuit

Captive Power Plant:

The proposed plant shall be configured with Waste Heat Recovery Boiler (WHRB) of capacity of 12 TPH operating at 74 kg/cm2 and 950± 50C.

The waste gas from the After Burning Chamber (A.B.C.) at about 950^0 C is led into the gas conditioning tower / boiler. The flue gas of the kiln will be used as source of the power where fluidized bed steam generating boiler will be used. The water for the power generation will be used, using low loss cooling towers, in where the loss in water during vaporization process in cooling tower is reduced by using dry type cooling towers.

WHRB based 4 MW power Generation

- The high temperature hot gases from the Kiln pass into the boiler through the inlet duct. The flue gases will be taken to kiln exhaust to the inlet of Waste heat recovery boiler where the heat of waste gases will be absorbed by the water and steam will be generated. The flue gases will be emitted from chimney through ESP. The ash collected in the hoppers will be stored in silos and transported to the ash disposal site and will be sold to brick manufacturing plant
- The waste gases have to be subjected to a waste gas treatment for conditioning with regard to its temperature, dust content, combustion constituents and contaminates before it can be used in settling chamber which reduces the waste gas velocity and removes the dust particles.
- The combustion in burning chamber takes place in a controlled temperature range between 950 to 1000 ^{0}C. It is ensured that the gas leaving the chamber has no traces of carbon monoxide or tar components.

In thermal power generation, chemical energy of coal is first converted into thermal energy (during combustion), which is then converted into mechanical energy (through a turbine) and finally into electrical energy (through a generator). Its raw materials are coal and char.

The power generating units will consist of boilers, turbo-generators with accessories, transformer and other complementary parts. Coal from the coal handling plant will be transported to the boiler bunkers through Conveyor belts. Thereon, the pulverized coal will be fed to the boiler furnace with the help of heated air driven by primary air (PA) fans. Forced draught (FD) fans will provide additional controllable air to the burners to assist desirable combustion.

This combustion will produce ash, out of which the bottom ash will fall to the bottom of the boiler. The fly ash carried in the flue gases will travel through the electrostatic precipitators (ESP) and bag filter. The relatively clear flue gas will pass through the stacks with the help of induced draught (ID) fans.

The heat released by the burning coal is absorbed by the demineralised boiler feed water passing through the boiler wall tubing to produce high-pressure steam. The steam will then

be discharged onto the turbine blades, which will make the turbine to rotate. The generators coupled to the turbines will also rotate and produce electricity. The electricity will be evacuated through the transformer for captive use.

DESCRIPTION OF ENVIRONMENT

Air Environment

The baseline environmental quality for the March, April & May 2018 was assessed in an area of 10 km radius around the proposed project site.

The predominant wind directions are from SE and SSE.

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

PM_{10} - 31.9 to 52.7 µg/m^3.

$PM_{2.5}$ - 11.6 to 17.8 µg/m^3

SO_2 - 7.1 to 11.6 µg/m^3

NO_x - 7.5 to 12.8 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 PM_{10}, $PM_{2.5}$, SO_2 and NO_x were found within the National Ambient Air Quality Standards (NAAQ).

Water Environment

A total 12 samples including eight 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 observations of soil characteristics are discussed parameter wise below;

(a) Texture of soil samples from agriculture lands, waste land and forest land are silty clay loam, silt loam & clay loam.

(b) Colour of soil samples from agriculture lands, waste land and forest land are Reddish brown and red.

(c) The bulk density of soil samples from waste land are in the range of 1.61 to 1.62 g/cc and sample from agriculture land are in the range of 1.72 to 1.79 g/cc and sample from forest land are in the range of 1.63 to 1.67 g/cc.

(d) Soil samples from waste land have pH values between 6.9 to 7.10 and sample from agriculture land have 7.2 to 7.5 and sample from forest land have 7.2 to 7.4 ranges of pH values. The pH values are indicating nature of soil samples is neutral to alkaline.

(e) Soil samples from waste land have conductivities between 0.097 to 0.101 mmhos/cm and conductivities of soil sample from agriculture land ranges between 0.152 to 0.158 mmhos/cm and conductivities of soil sample from forest land ranges between 0.147 to 0.187 mmhos/cm.

(f) Soil samples from waste land have Organic Matter between 0.68 to 0.82 % and sample from agriculture land have between 1.2 to 1.4 % Organic Matter and sample from forest land have between 0.98 to 1.1%. These values represent moderate fertility of soils.

(g) Soil samples from waste land have concentration of Available Nitrogen values ranged between 273 to 336 kg/ha and samples from agriculture land range between 412.8 to 431.0

kg/ha and samples from forest land range between 350 to 398 kg/ha Available Nitrogen value.

(h) Soil sample from waste land have concentration of Available Phosphorous values ranged between 50.7 to 53.5 kg/ha and soil samples from agriculture land have concentration values ranges from 55.9 to 66.0 kg/ha and samples from forest land have concentration values ranges from 54.9 to 63.5 kg/ha.

(i) Soil sample from waste land have concentration of Available Potassium values range between 308.2 to 315.4 kg/ha and sample from agriculture land concentration of Available Potassium as its values range between 390.1 to 456.4 kg/ha and sample from forest land have values range between 437 to 494 kg/ha.

(j) 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 average fertility.

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

The impacts on air quality due to the proposed 190 TPD Sponge Iron Plant have been identified. 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.

- The raw material feed side of rotary DRI Kiln has a natural structure below the After Burner Chamber (ABC) that acts as Dust Settling Chamber (DSC). About 15-20% coarse dust settles in DSC by means of gravity. In ABC, the CO content of gases is converted to CO_2. This conversion process is exothermic and the temperature of gases rises to 1000-1050^0 C. In the proposed system Gas Conditioning Tower (GCT) followed by pollution control equipment will be provided and cleaned gas is emitted through stacks.

- The exhaust gases coming out of WHRB, having temperature around 150-175^0 C is taken to pollution control equipment i.e. ESP. Different industries using different type of pollution control equipment like bag filter, scrubber and some also have Electrostatic Precipitators (ESP) the clean gas is let out through stacks.

- Rotary kiln DRI plants have emergency stack / safety cap above the ABC of feed end column. The safety cap is required to maintain the positive pressure inside the kiln and

avoid chances of CO related explosion. In many of the plants it is observed that continuous black smoke was discharged from this cap. At night the flame cum black smoke is more visible. The owners resort to this practice of discharging untreated emissions

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. LMEL shall provide dust suction system which will control fugitive emission due to 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 totally packed and covered so that there is no chance of dust leakage.
- The raw material transporting vehicle will be regular check up & maintenance of vehicles, it will be ensured that all trucks/dumper caring raw material (Iron Ore Fines) covered by Tarpaulin.
- The LMEL will get screened raw material and will be stock piled in the premises. Spraying of water on the stockyard stockpiles controls any fugitive emissions from this area.
- From Sponge iron plant fugitive emission will be envisaged due to accumulation of ash on finished product surface.
- An ESP followed by 65mtr stack will be installed to Rotary Kiln to control source emission.
- Proper measures will be adopted by installing sprinkler, nozzels, for control of fugitive emission at Coal stack area, Storage area etc. Internal roads will be concreted to minimize fugitive emission due to transportation.
- Use of indoor or covered stockpiles or when open-air stockpiles are unavoidable, use water spray system, dust suppressants, windbreaks and other stockpile management techniques.

Prediction of Air quality

The mathematical model used for predictions on air quality impact in the present study area is ISC-AERMOD View. It is the next generation air dispersion model, which incorporates planetary boundary layer concepts. These models are used extensively to assess pollution concentration and deposition from a wide variety of sources. The predicted values in respect to PM_{10}, SOx and NOx were found to be below the Ambient Air Quality Standard of CPCB.

Impact on Water Environment

The Iron Ore beneficiation needs process water for making iron ore slurry to be passed through the various equipment's as needed for wet concentration of Fe in the ore. However most of this water comes back to the circuit from the thickeners and filters used for making the final concentrate and tailing cake. The major use of the water is to account for the difference in the water contents of the concentrate (8-10%) and the tail (15-18%) and the water input with the fine ore (-) 10 mm (4-6%). Water losses are due to evaporation and other process losses and blow down of the tanks (about 2-3%). The major used water therefore goes with the product and the tails which eventually gets evaporated in the drier or naturally. The process water lost is accumulated in a tank and used for irrigation and spraying in the yard. Domestic waste water generated will be treated in the Packaged type STP and treated water reused for plantation purpose.

Impact on Noise Environment

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.

SOLID WASTE

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

Solid Waste Generation & Mitigation Measures

Sr. No	Waste	Proposed Quantity	Mitigation Measures
1	Tailing	27000TPA	Tailings will be sold to cement plant/ Brick/Tiles Manufacturers.
2	Dolachar	6270 TPA	Dolachar will be sold to power generation plant.
3	Ash	15000TPA	It will be sold to brick manufacturers.

Mitigation Measures

Ash will be used for brick preparation in brick making unit in and around of M/s Lloyds Metals and Energy Limited and balance quantity will be stored in ash dump area.

SOCIO-ECONOMIC ENVIRONMENT

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.
- Increase in employment opportunities and Reduction in migrants to outside for employment.
- Growth in service sectors.
- During operation phase 60 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 Llyods Metals and Energy Limited 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 proposed project of M/s Lloyds Metals and Energy Limited. The proposed Sponge Iron Pant of capacity 190 TPD, Captive Power Plant (4 MW WHRB) and 90,000 TPA Iron ore Beneficiation Plant is located at MIDC Konsari, Village: Konsari, Tahsil: Chamorshi, Dist: Gadchiroli, 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 Lloyds Metals and Energy 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 65 m is proposed for proper dispersion of flue gases. The following Environmental Management Plan will be implemented to control air emissions from the proposed plant.

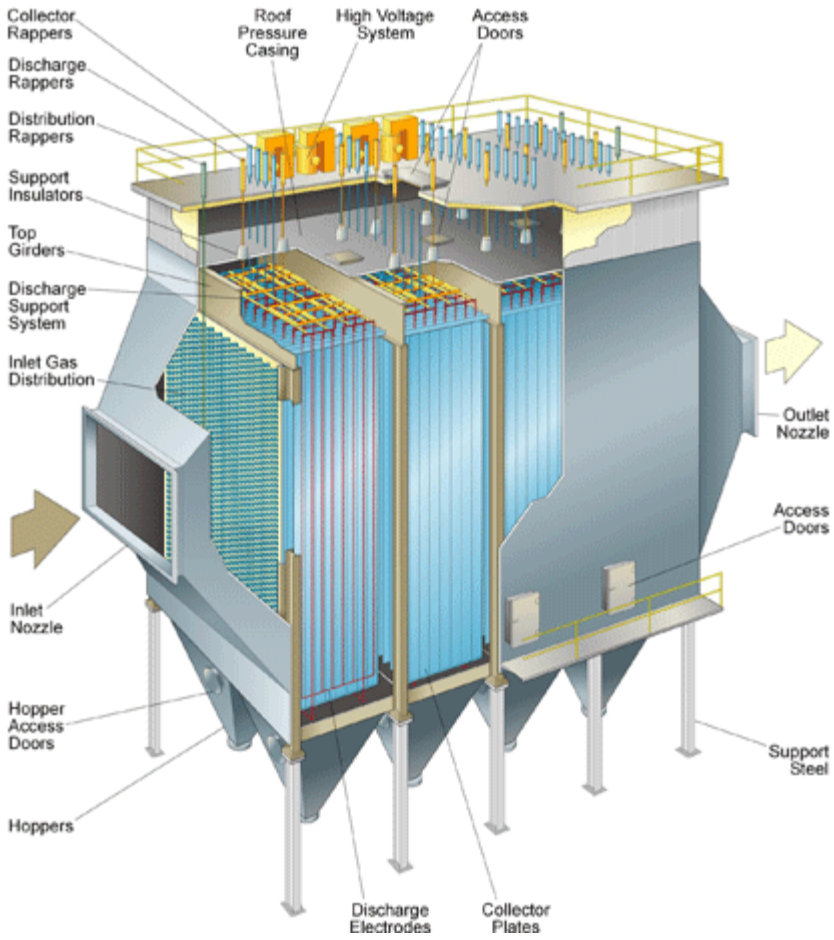
- Dust suction system will be employed in raw material handling points by means of suitable duct connected to an induced draught fan in order to minimize fugitive emission.
- The coal and iron ore after drying shall be conveyed through closed / covered material handling equipments like tube conveyor etc. to ensure minimum dust pollution.
- ESP for Rotary Kiln and Bag filter for Coal Crusher, Iron Ore, Coal Crusher, Cooler Discharge will be provided to control source emission.
- Proper measures will be adopted by installing sprinkler, nozzels, for control of fugitive emission at Coal stack area, Storage area etc.
- Internal roads will be concreted to minimize fugitive emission due to transportation.
- Regular check up & maintenance of vehicles used for the raw material transportation will be done, it will be ensured that all trucks/dumper carrying raw material (Iron Ore Fines) will be covered by Tarpaulin.
- 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} 100µg/m^3, $PM_{2.5}$ 60µg/m^3, SO_2 80µg/m^3, NOx 80µg/m^3 and CO 04µg/m^3) prescribed by CPCB.

- 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
- A green belt will be developed to control fugitive emissions & gaseous pollutants to keep clean and healthy environment.

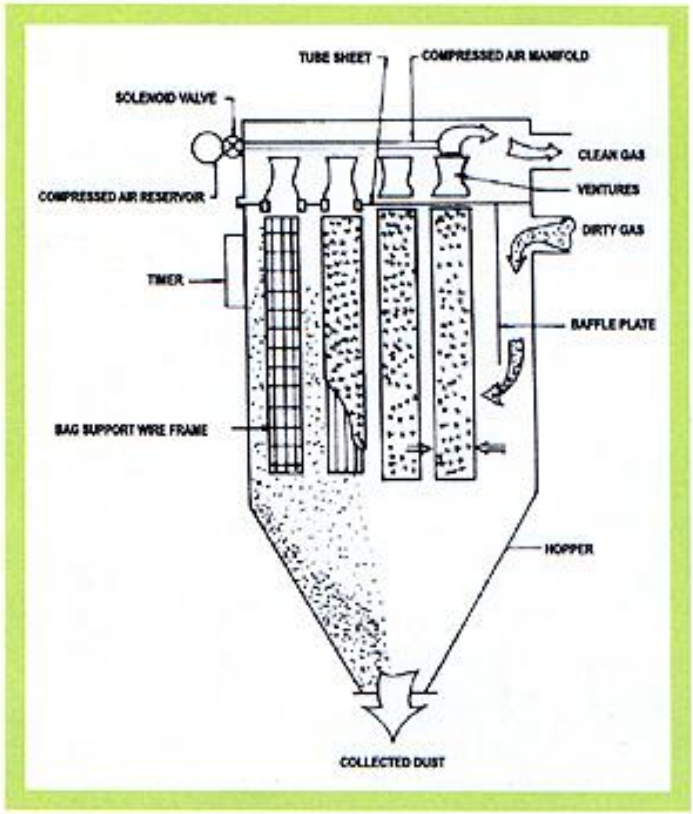
Summary of Air Pollution Control Equipment

Sr. No.	Source	Pollution Control equipment
1	Sponge Iron	Bag filter/ ESP



Typical Electrostatic Precipitator (ESP)

Particles suspended in a gas enter the precipitator and pass through ionized zones around the high voltage discharge electrodes. The electrodes, through a corona effect, emit negatively charged ions into the gas and to the grounded collecting plates. The ionized field around the discharge electrodes changes the particulate causing it to migrate to the positively charged surface of the collecting electrode. The charged particles agglomerate on the grounded collecting plates and their charge bleeds off. Rappers dislodge the agglomerated particulate, which falls into the collection hoppers for removal.



A typical pulse jet Bag Filter

Bag Filters

The dust-laden air enters into the bag filter. The dust /powder separates inside the bag filter chamber. The air is uniformly distributed avoiding channeling while the powder is separated. Initially a coat of material forms on the bags. Subsequently, the coat acts as the filtering medium. The dust is accumulated on filter elements while the air passes through the filter bags from outside to inside. The accumulated powder is dislodged from the bags by reverse pulsejet air intermittently. The dislodged powder falls on bottom cone and is discharged through powder discharge valves. The dust free air is sucked by induced draft fan and is exhausted to atmosphere.

Noise Environment

- 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.

Water Environment

In the coal based sponge iron plant, water is used mainly in three areas namely cooler, ABC and ESP. The water requirement in rotary kiln DRI plant is mainly for cooling the discharge feed from 950-1050^{0}C to below 100^{0}C. Water is continuously sprinkled over the rotary cooler shell and is allowed to fall on a settling tank located below the rotary cooler / near the cooler. Makeup water is added in the tank to cool the hot water and compensate evaporation loss. The water from settling tank is re-circulated for sprinkling over the rotary cooler. In ABC water is sprayed through the nozzles in the form of fine spray. This controls the temperature of the gasses. Normally, no wastewater is discharged from the plants.

The Iron Ore beneficiation needs process water for making iron ore slurry to be passed through the various equipment's as needed for wet concentration of Fe in the ore. However most of this water comes back to the circuit from the thickeners and filters used for making the final concentrate and tailing cake. The major use of the water is to account for the difference in the water contents of the concentrate (8-10%) and the tail (15-18%) and the water input with the fine ore (-) 10 mm (4-6%). Water losses are due to evaporation and other process losses and blow down of the tanks (about 2-3%). The major used water therefore goes with the product and the tails which eventually gets evaporated in the drier or naturally. The process water lost is accumulated in a tank and used for irrigation and spraying in the yard. Domestic waste water generated will be treated in the Packaged type STP and treated water reused for plantation purpose.

Management Plan of Solid Waste

- Char should be sold to brick manufacturers; it is used as fuel for generation of power.

- Under no circumstances char should be disposed off in agricultural fields/other areas.
- Logbook for daily record, of char production and usage must be maintained by the industry and the record shall be made available to officials of CPCB/SPCB during inspection.
- Ash will be sold to brick manufacturers.
- Tailings from the beneficiation unit will be sold to cement plant/ Brick/Tiles Manufacturers.

Socio Economic Environment

M/s. Lloyds Metals and Energy Limited would aid in the overall social and economic development of the region. The plant will give employment to about direct employment to 60 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. Lloyds Metals and Energy Limited 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.