

Executive Summary

of

**EXPANSION OF
(2 x 1000 TPD Iron ore Pellet Plant with coal
Gasifier of 26000 M³/hr, 2 x 500 TPD Sponge
Iron plant and 50 MW CPP
(25 MW WHRB + 25 MW AFBC)**

Project by

M/s SMW Ispat Pvt Ltd

At

Plot No:- B-1/2, B-1/3, B-1/4, , R2 and R3 MIDC Deoli
and Survey no.:- SR- 46/2 562, 564, 565, Deoli,
District – Wardha, Maharashtra.

Environmental Consultant
Pollution and Ecology Control Services

Accreditation no.: NABET/EIA/2023/SA 0165 valid upto 9th June 2023

EXECUTIVE SUMMARY

1.0 INTRODUCTION

Environment clearance (EC) to the existing project for Reduced Briquette Iron (RIB)-800 TPD (8X100 TPD) and Iron ore Beneficiation plant-2,000 TPD was initially issued by MoEF&CC., New Delhi accorded vide letter no. J-11011/664/2009-IA.II (I) dated 04.10.2011 in the name of M/s. Mahalaxmi TMT Pvt. Limited under the provisions of the EIA Notification, 2006. Transfer of Environment Clearance from M/s. Mahalaxmi TMT Pvt. Limited to M/s. SMW Ispat Pvt Ltd is accorded to vide letter no. J-11011/664/2009-IA.II (I) dated 6th October 2022.

The proposed expansion project attracts the provisions of EIA Notification, 2006 and falling under Category “A” of Schedule, 3 (a) Metallurgical Industries (Ferrous and Non-ferrous) and sub-category 1(d) (Thermal power). The project proponent submitted online application on 20th June 2020 along with Form-1, Pre-feasibility report and other relevant required documents for Terms of Reference (TORs) for undertaking detailed EIA study. The proposal was granted Standard ToR vide letter No. J-11011/664/2009-IA.II (I) dated 16.07.2020 for undertaking EIA study for proposed expansion project of installation of 2 x 1000 TPD Iron ore Pellet Plant along with coal Gasifier of 26000 NM³/hr, 2 x 500 TPD Sponge Iron plant and 50 MW CPP (25 MW WHRB + 25MW AFBC) at Plot No.:- B-1/4, B-1/2 MIDC Deoli and Survey no.:- SR- 46/2, 562, 564, 565, Deoli, District -Wardha, Maharashtra.

The Standard Terms of Reference (TOR) for the expansion project has been issued in the name of Mahalaxmi TMT Private Limited vide letter F No.J-11011/664/2009-IA.II (I) dated 16th July 2020 for preparation of EIA/EMP report. The project proponent has applied online proposal no. **IA/MH/IND/289129/2022** dated 18/08/2022 for transfer the Terms of Reference from “M/s Mahalaxmi TMT Pvt. Ltd.” to “M/s SMW Ispat Private Limited”. Accordingly MOEF &CC has issued TOR in the name of M/s SMW Ispat Private Limited vide letter F No.J-11011/664/2009-IA.II (I) on **26th December, 2022. The Public hearing was**

conducted by MPCB on 15.09.2021. As per this application, the Pellet Plant is proposed on plot no B1/4 and SR-46, 562, 564, 565 whereas DRI plant and CPP are proposed on plot no. B1/2. Pellets from pellet plant proposed to be transported by Tarpaulin Covered Trucks to Plot no. B1/2 for DRI plant by covering 200 mt. distance. Plot no. B1/3 which is in between plot no. B1/2 & B1/4 is vacant plot and was under NCLT Act and in possession of SBI, Mumbai. To avoid the proposed Road Transportation (for transportation of Pellet) and to minimize the fugitive emission due to transportation company were trying to purchase in between plot i.e. plot no. B1/3 and finally purchased the plot from State Bank of India on 18.01.2023. In addition to this MIDC has leased out plot no. R2 & R3 (Total area 18000 sq. mt.) for construction of bachelor hostel on 500 sq.mt. Balance 13000 sq.mt area will be used for additional plantation. In the mean time the SMW Ispat Pvt Ltd has started and completed the construction of foundation for 2x500 TPD Sponge Iron Plant which categorised under violation as per EIA Notification 2006 and its various amendments. The total cost involved for this construction is Rs. 1.75 crore. Accordingly the application for seeking amendment in ToR was made w.r.t. change in project land area from 22.84 ha to 33.4934 and for appraisal of proposal under violation category as per the provisions contained in the MoEF&CC Standard Operating Procedure dated 07.07.2021. This proposal was considered and recommended in 26th meeting of Expert Appraisal Committee (Industry-1 Sector) held on 12th, 13th and 17th April, 2023. Amendment in ToR for addition of land and under violation category was granted vide letter was granted J-11011/664/2009-IA.II(I) dated 16th May 2023 and as per TOR condition, to conduct fresh public hearing for the new proposed project land area of 33.4934 ha.

The proposed project attract the provisions of EIA Notification, 2006 and falling under Category A of Schedule, 3 (a) Metallurgical Industries (Ferrous and Non-ferrous).

Project at a Glance

| Sr. No. | Description | Details | | | | | | | | | | | | | | | |
|---------|---|--|---------------------|---|----------|---|---------------------|---------------------------|---|--------------------|--------------------------|---|-------------|---|---|------------|-------------------------|
| 1 | Nature of the project | Expansion of (2 x 1000 TPD Iron ore Pellet Plant with coal Gasifier of 26000 M3/hr, 2 x 500 TPD Sponge Iron plant and 50 MW CPP (25 MW WHRB + 25 MW AFBC) | | | | | | | | | | | | | | | |
| 2 | Proposed Products | <table border="1"> <thead> <tr> <th>Sr. No</th> <th>Product</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Pelletisation Plant</td> <td>2X1000 TPD (6,60,000 TPA)</td> </tr> <tr> <td>2</td> <td>Coal Gasifier unit</td> <td>26000 Nm³/h</td> </tr> <tr> <td>3</td> <td>Sponge Iron</td> <td>500 TPD X 2 Kiln =1000 TPD (3,30,000 TPA)</td> </tr> <tr> <td>4</td> <td>WHRB & CPP</td> <td>(25 MW HRB +25 MW AFBC)</td> </tr> </tbody> </table> | Sr. No | Product | Quantity | 1 | Pelletisation Plant | 2X1000 TPD (6,60,000 TPA) | 2 | Coal Gasifier unit | 26000 Nm ³ /h | 3 | Sponge Iron | 500 TPD X 2 Kiln =1000 TPD (3,30,000 TPA) | 4 | WHRB & CPP | (25 MW HRB +25 MW AFBC) |
| | | Sr. No | Product | Quantity | | | | | | | | | | | | | |
| | | 1 | Pelletisation Plant | 2X1000 TPD (6,60,000 TPA) | | | | | | | | | | | | | |
| | | 2 | Coal Gasifier unit | 26000 Nm ³ /h | | | | | | | | | | | | | |
| | | 3 | Sponge Iron | 500 TPD X 2 Kiln =1000 TPD (3,30,000 TPA) | | | | | | | | | | | | | |
| 4 | WHRB & CPP | (25 MW HRB +25 MW AFBC) | | | | | | | | | | | | | | | |
| 3 | Raw Material Requirement | 1) Iron Ore fines, Bentonite , Lime Stone / Dolomite for Pellet Plant 2) Pellet, Coal and Dolomite for Sponge iron Plant and 3) Dolochar & Coal for CPP. | | | | | | | | | | | | | | | |
| 4 | Water requirement | The total water requirement will be 5515 KLD Source: MIDC Deoli | | | | | | | | | | | | | | | |
| 5 | Power requirement & Source | Total Power required for proposed expansion project is 30 MW. Electric power will be supplied from own captive power plant and MSEB, if required. | | | | | | | | | | | | | | | |
| 6 | Land for proposed plant | The total land of SMW Ispat Private Limited for the proposed plant is 31.4934 Ha. | | | | | | | | | | | | | | | |
| 7 | Total manpower after commissioning of the unit. | The proposed project creates employment for 2050 people. | | | | | | | | | | | | | | | |
| 8 | Estimated Cost of the project | Total cost of the project Rs. 380 Cr. | | | | | | | | | | | | | | | |

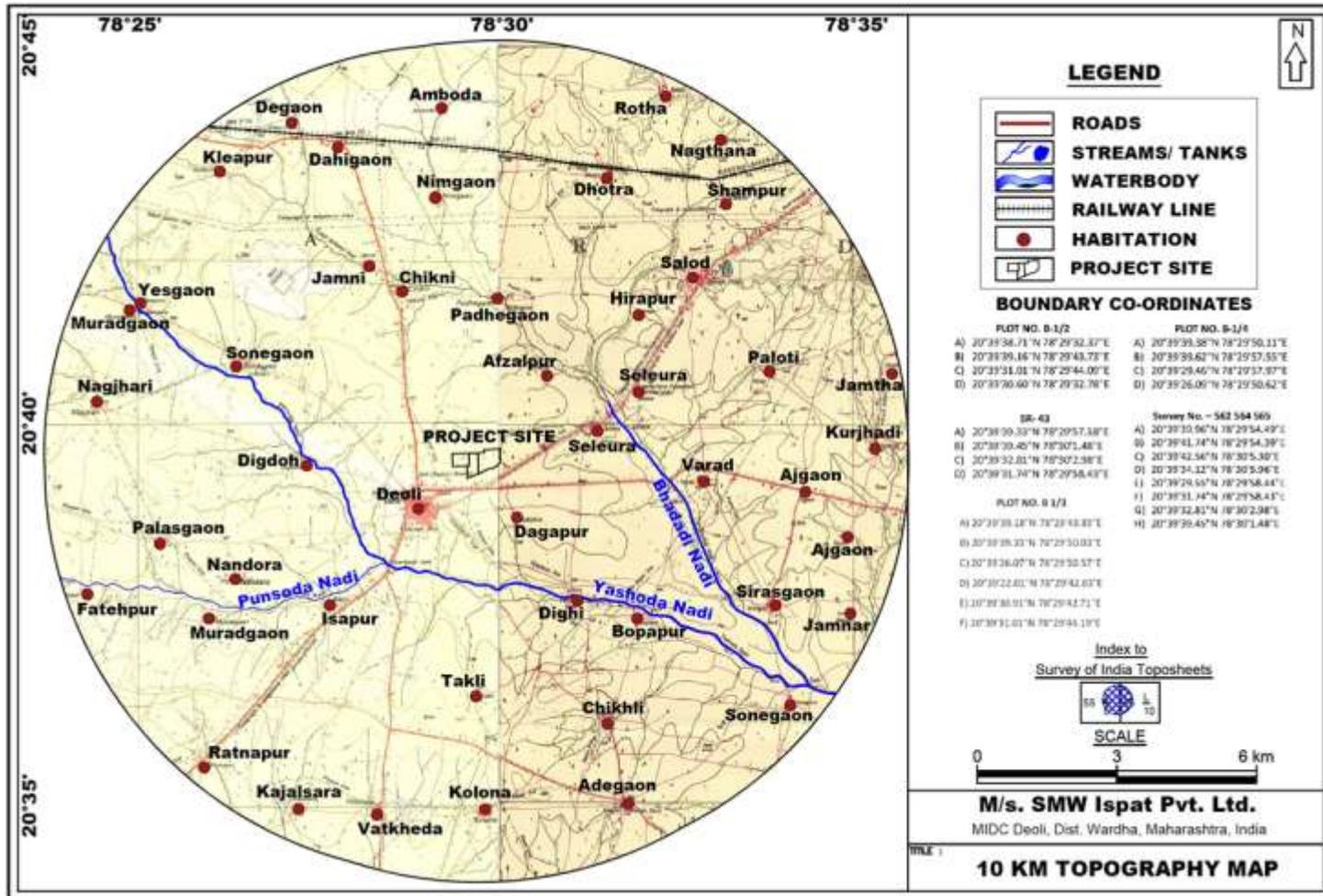
Environmental setting of the project is given below

| Sr. No. | Particulars | Details |
|---------|----------------------|--|
| 1 | Latitude & Longitude | Plot No. B-1/2 A) 20°39'38.71"N 78°29'32.37"E B) 20°39'39.16"N 78°29'43.73"E C) 20°39'31.01"N 78°29'44.09"E D) 20°39'30.60"N 78°29'32.78"E Plot No. B-1/3 A) 20°39'39.18"N 78°29'43.85"E B) 20°39'39.35"N 78°29'50.03"E |

| | | |
|----|--------------------------|---|
| | | <p>C) 20°39'26.07"N 78°29'50.57"E D) 20°39'22.01"N 78°29'42.83"E E) 20°39'30.91"N 78°29'42.71"E F) 20°39'31.01"N 78°29'44.19"E</p> <p>Plot No. B-1/4 A) 20°39'39.38"N 78°29'50.11"E B) 20°39'39.62"N 78°29'57.55"E C) 20°39'29.46"N 78°29'57.97"E D) 20°39'26.09"N 78°29'50.62"E</p> <p>SR- 46/2 A) 20°39'39.33"N 78°29'57.38"E B) 20°39'39.45"N 78°30'1.48"E C) 20°39'32.81"N 78°30'2.98"E D) 20°39'31.74"N 78°29'58.43"E</p> <p>Survey Nos: 562, 564, 565 A) 20°39'39.96"N 78°29'54.49"E B) 20°39'41.74"N 78°29'54.39"E C) 20°39'42.56"N 78°30'5.30"E D) 20°39'34.12"N 78°30'5.96"E E) 20°39'29.55"N 78°29'58.44"E F) 20°39'31.74"N 78°29'58.43"E G) 20°39'32.81"N 78°30'2.98"E H) 20°39'39.45"N 78°30'1.48"E</p> <p>R2 and R3 A. 20°39'24.90"N 78°29'48.32"E B. 20°39'27.33"N 78°29'53.40"E C. 20°39'22.61"N 78°29'53.63"E D. 20°39'21.02"N 78°29'50.51"E</p> |
| 2 | Total Land in possession | 334934 Sq m |
| 3 | Elevation above MSL | 262 m |
| 4 | Toposheet | 55 L/6, 55 L/10 |
| 5 | Present landuse | Industrial use |
| 6 | Nearest Highway | NH – 204/SH – 03 : 0.5 Km (SSE) |
| 7 | Nearest Airport | Nagpur Airport : 75.0 Km (NNE) |
| 8 | Nearest Railway Station | Wardha : 12.5 (NE) |
| 9 | Nearest Village | Yengeddeo : 600 m (S) Deoli : 1.5 Km (WSW) |
| 10 | Nearest water body | Punsod Nadi : 3.0 Km (SW) |

| | | |
|----|--|---|
| | | Yeshoda Nadi : 3.5 Km (SW) Bhadadi Nadi : 5.0 Km (ENE) Canal: Within the plant boundary |
| 11 | Forest | Nil |
| 12 | Ecologically Sensitive Zones like wild life sanctuaries, national parks and biospheres | Nil |
| 13 | School | 1) Z P Upper Primary School : 2.0 Km (ENE) 2) Janta high school : 1.5 Km (SW) 3) Nagar Parishad High School :1.5 Km (SW) 4) Yeshwant Girls High School, Deoli :1.5 Km (SW) |
| 14 | Hospital | 1) Dr.Pal hospital Deoli : 1.5 Km (SW) 2) Mahatma Gandhi Ayurved College, Hospital And Research Centre : 8.0 Km (NE) 3) Acharya Vinoba Bhave Rural Hospital : 9.5 Km (NE) |

The topographical map showing specific location of Project site (10 k m) is given in the following Figure



Source: SOI Toposheet

Topographical Map (10 km radius)

2.0 PROJECT DESCRIPTION

M/s SMW Ispat Pvt Ltd has issued EC for 8X100 TPD static kiln at Plot No. B -1/4 vide letter No F-No J-11011/664/2009-IA II (I). Out of this, only 2 x 100 TPD Static kiln is installed but in present condition, these two kilns are not-operational. A shed for 2000 TPD Iron Ore Beneficiation plant is built –up and this unit was never installed. In future also there is no possibility to install and to make it operational.

However the project under consideration is to install 2 x 500 TPD of Rotary Kiln and 50 MW of CPP (25 WHRB+ 25 MW AFBC) at plot no. B1/2 on existing vacant land available within the company along with the 2X1000 TPD Iron pelletisation plant at plot no. B-1/4 and SR 46/2 on the space reserved for 6 x 100 TPD static kilns and beneficiation plant. In future, these 6 static kiln of 100 TPD and Beneficiation plant will not be installed.. In addition to this MIDC has leased out plot no. R2 & R3 (Total area 18000 sq. mt.) for construction of bachelor hostel on 500 sq.mt. Balance 13000 sq.mt area will be used for additional plantation.

The present proposal is as follows:-

Table 2 : Present Proposal

| Plant Details | Unit Capacity | Annual Capacity(TPA) |
|----------------------|--------------------------|-----------------------------|
| Pelletisation Plant | 2 x 1000 TPD | 6,60,000 |
| Coal Gasifier unit | 26000 Nm ³ /h | 26000 Nm ³ /h |
| Sponge Iron | 500 TPD X 2 Kiln | 3,30,000 |
| WHRB & CPP | 25 MW WHRB +25 MW AFBC | 50 MW |

PROCESS DESCRIPTION

MANUFACTURING PROCESS

A) Pelletisation Plant

Manufacturing Process of Pellet

Following various process involves in pelletisation process

1. Feed Preparation,
2. Green Ball production

3. Green Ball indurations
 - a. Drying
 - b. Preheating
 - c. Firing
4. Cooling of hardened pellets

Manufacturing Process of Proposed Coal Gasifier Plant

Extended Shaft Gasifier technology is used in Coal Gasifier Plant. This New Technology is to produce a clean consistent quality Producer Gas of high Calorific Value from majority of grades of Indian Coal from 'A' to 'G' grade and with faster rate of gasification or more coal through-put per unit grate area. The Process is continuous and as controllable and maneuverable as oil firing. The Process is Eco-friendly; the equipment is operation friendly and conforms to all PCB norms. Various Process Steps and Reactions are involved in the coal gasification like Pre-heating, Drying and Distillation Zone, oxidation zone and ash zone. The detailed process flow chart is given as under :

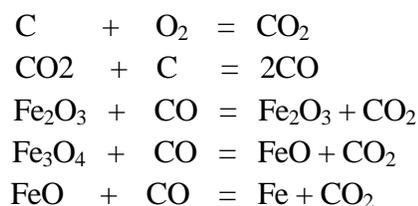


Flowchart Pelletisation plant

Sponge Iron Process

The process of sponge iron manufacturing involves removal of oxygen from iron ore. Sponge Iron also called as Direct-Reduced Iron (DRI) is produced from direct reduction of iron ore (in the form of lumps, pellets or fines) by a reducing gas using fuel i.e. natural gas or coal. The reducing gas is a mixture majority of Hydrogen (H₂) and Carbon Monoxide (CO) which acts as reducing agent. This process of directly reducing the iron ore in solid form by reducing gases is called direct reduction. In this process coal will be used for producing reducer gas and the process will be carried out in a Horizontal Rotary Kiln. The finished product i.e. sponge Iron observed under a microscope, resembles a honeycomb structure, which looks spongy in texture. Hence the name is called sponge iron. The reduction of Iron Ore can be achieved by using either carbon bearing material, such as non-coking coal or a suitable reducing gas in the form of reformed natural gas. The processes employing coal are known as solid-reductant of coal-based processes while those employing reducing gases are known as gas-based processes.

The basic reactions in this process are as follows:



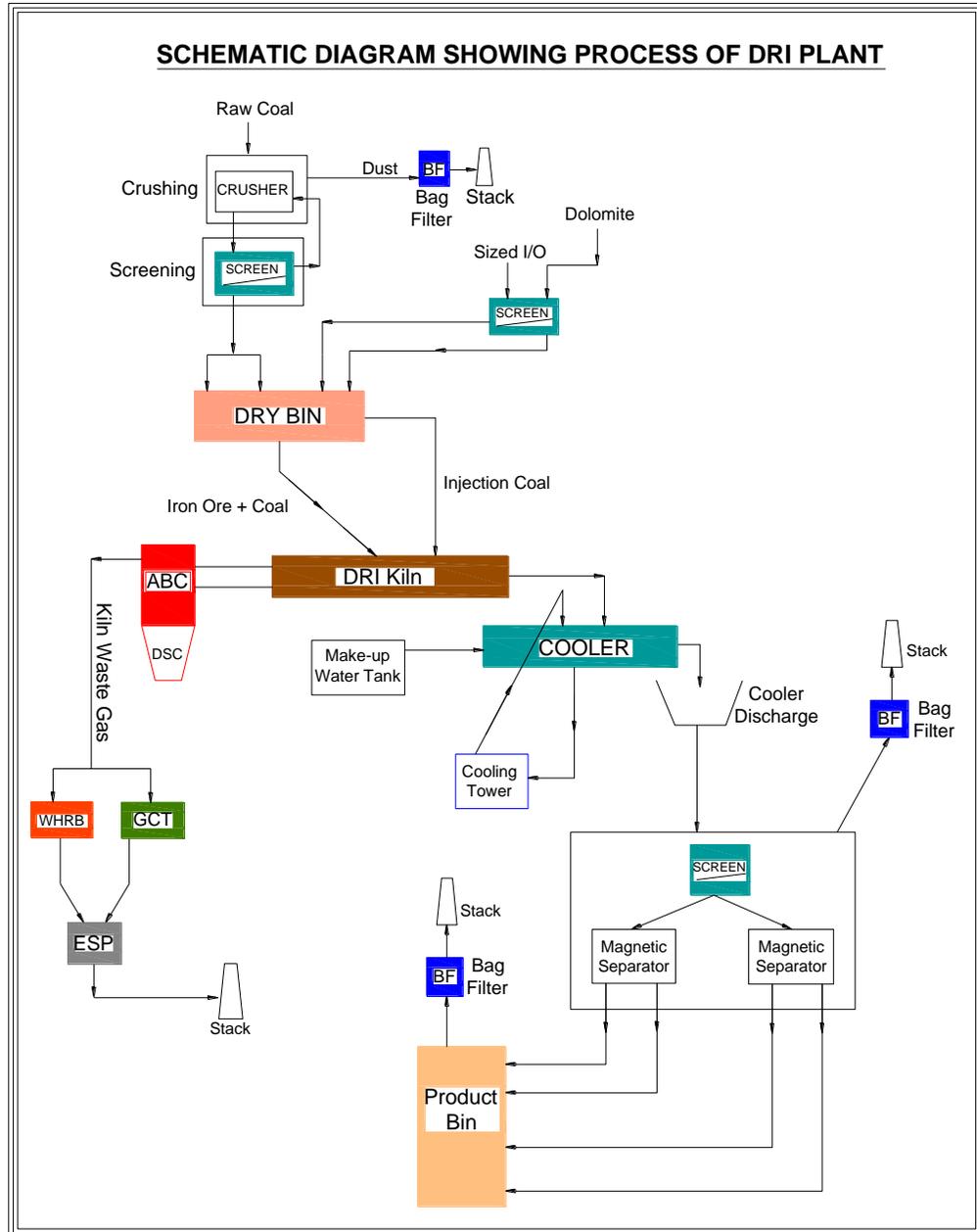


Figure 6: Sponge Iron Manufacturing Process

C. Waste Heat Recovery System & CPP:

Waste heat recovery system to generate Power

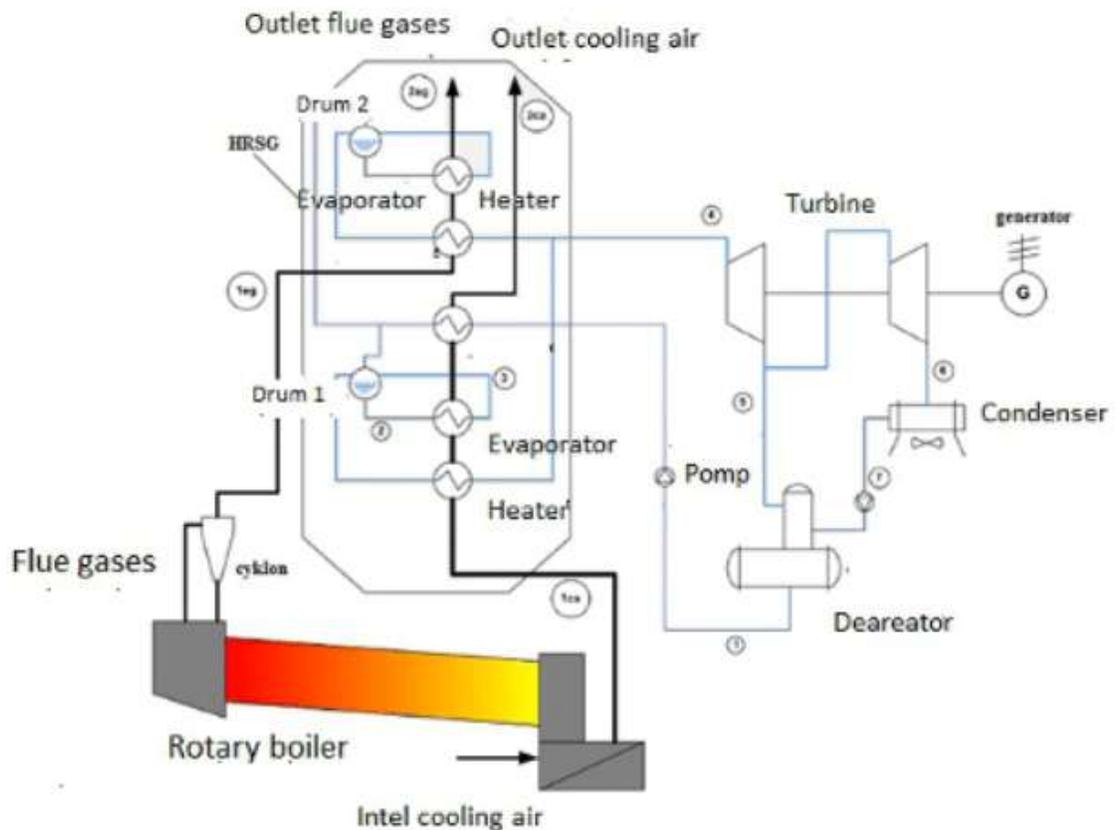
In Sponge Iron manufacturing, flue gases are generated with a temperature of 900-1000 °C during the process. This heat is cooled without utilizing heat by supplying the air by using FD fans. The heat content in the flue gas is enough to generate the power by installing the waste heat recovery system i.e. boiler. The high temperature flue gases are pass through the boiler for generate the steam and that can be used in turbine to generate the power.

Background

All sponge Iron Manufacturing Industries in India are coal based industries and flue gases are generated during the process which have higher temperature i.e.900-1000 Deg C. These industries are operated throughout the year. At present all industries are not utilizing the heat from the flue gases and cooled by FD/GCT system before sending to ESP. Thus power generation using generated flue gases are one of energy conservation opportunities in sponge iron plants by installing waste heat recovery system.

Energy Conservation Potential

In 500 TPD coal based sponge iron plants, during the process at least 120000 m³/hr flue gases are generated and having the temperature of 900-1000 °C. The total power generated in sponge iron plants are depends on installed capacity of sponge iron plants.

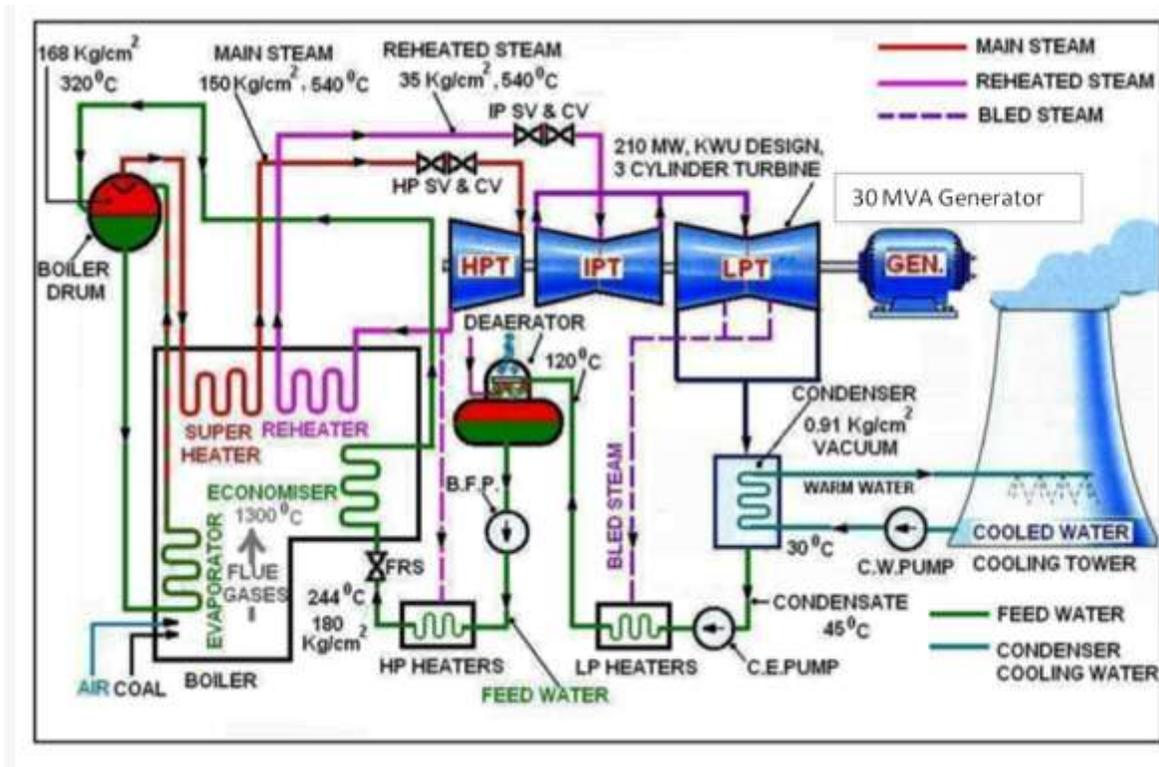


Process Diagram of WHRB

Captive Power plant (AFBC):

A power plant continuously converts the energy stored in fossil fuels (coal, oil, natural gas) or hot gases into shaft work and ultimately into electricity. The working fluid is water, which is sometime in liquid phase and sometimes in vapour phase, during its cycle of operation. Power Plant as a bulk energy converter from fuel to electricity using water is a working medium.

Coal from the coal handling plant will be transported to the boiler bunkers through conveyors belts. There on, the coal of size <6 mm 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 assist desirable combustion. The heat released by the burning coal is absorbed by the demineralized 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 pass to the transformer which will increase the voltage to the desired level of the transmission grid system. 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) where it will be precipitated on the high voltage electrodes. The relatively clear flue gas will pass through the stacks with the help of induced draught (ID) fans. Bottom ash will be collected in dry form and disposed in ash disposal area.



Process Diagram of Coal based power plant

Availability of Technology /Equipment

Power generation from waste heat gases Technology is proven in sponge Iron plants and operating successfully in many sponge Iron plants in India. The technology is available and manufacturing in India by few major companies.

The following benefits are expected by Installing waste heat recovery Power plant using flue gases during the process in sponge iron plants.

- ❖ Heat from flue gases is used for power generation. No other raw material is required for power generation
- ❖ Reduction in environment Pollution
- ❖ Generated power can be used in SMS which is high power requirement industry. This will save the energy cost.
- ❖ Reduce the GHG emissions.

Capital Cost

The estimated cost of the proposed project will be Rs. 380 Cr.

3.0 DESCRIPTION OF THE ENVIRONMENT

Air Environment

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

PM₁₀ : 38.9 to 87.5 µg/m³.

PM_{2.5} : 23.6 to 48.6 µg/m³

SO₂ : 12.8 to 36.5 µg/m³

NO_x : 19.2 to 48.3 µg/m³

| | | | | |
|--------------------------------------|-----------------------|----------------------|----------------------|----------------------|
| Industrial Area | PM ₁₀ | PM _{2.5} | SO ₂ | NO _x |
| 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 (NAAQS).

Water Environment

A total 14 samples including six surface & eight ground water samples were collected and analyzed. The water samples were analyzed as per Standard Methods for Analysis of Water and Wastewater, American Public Health Association (APHA) Publication.

It was observed that the characteristics of the surface and ground water samples were found to be within the permissible limits stipulated standard for drinking water (BIS 10500 – 2012) except the total coliforms in surface water samples which may be due to the human activities observed during sampling and requires disinfection before use for drinking purpose.

Noise Environment

The Noise levels are in the range of 36.7 – 57.0 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.

Noise levels measured at all eight stations (N-1, N-2, N-3, N-4, N-5, N-6, N-7 and N-8) are low and well within limit of either 65.0 dB(A) for Residential Area or 75.0 dB(A) for Industrial Area as given in MoEF&CC Gazette notification for National Ambient Noise Level Standard.

Land Environment

Samples were collected at three sites during October 2020. Three samples from three different locations of three different depths viz. 0-30, 30-60 and 60-90 cm below the surface and homogenized from each. This method is in line with IS: 2720 & Methods of Soil Analysis, Part-1, 2nd edition, 1986 (American Society for Agronomy and Soil Science of America). 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 silty-clay and Murrum in Texture Classification.
- b) Colour of soil samples from waste land is Brown & red color and for agriculture land is red in color.
- c) The bulk density of soil samples is in the range of 1.00 to 2.14 gm/cc.
- d) Soil samples have pH values in the range of 6.70 to 7.55. The pH values are indicating nature of soil samples as neutral to slightly alkaline.
- e) Soil samples have conductivities between 0.039 to 0.133 mmhos/cm.
- f) Soil samples have Organic Matter between 0.15 to 0.71 %. These values represent average fertility of soils.
- g) Soil samples have concentration of Available Nitrogen values ranged between 59.4 to 287.3 kg/ha.
- h) Soil sample have concentration of Available Phosphorous values ranged between 205.92 to 413.83 kg/ha.
- i) Soil sample have concentration of Available Potassium values range between 8.87 to 121.50 kg/ha.

Interpretation

Samples collected from different land use classifications indicating the soil Sample were Brown and Red in colour. All the major nutrients were present, namely, nitrogen's presence is very less to better, phosphorus is good in quantity and potassium is very less to average in quantity. The results also show that the soil needs to be replenished with nutrients like nitrogen and potassium

4.0 Anticipated Impacts & Mitigation Measures

The emissions due to transportation of vehicles in the study area were determined from fuel-based emission factors and number of vehicles plying on roads in the area. Loading and transportation of raw materials are the significant sources of emissions. The Maximum predicted Incremental Levels ($\mu\text{g}/\text{m}^3$) are given below

| Parameters | Maximum Incremental Levels ($\mu\text{g}/\text{m}^3$) | |
|--------------------|---|-------------------------------------|
| | Proposed | Cumulative (Existing + Proposed) |
| PM ₁₀ | 1.14 | 2.05 |
| Distance/Direction | 100 m/WSW | 150 m/WSW |
| Sox | 4.27 | 5.62 |
| Distance/Direction | 90 m/SW | 150 m/SW |
| Nox | 3.42 | 4.29 |
| Distance/Direction | 90 m/WSW | 100 m/WSW |

The majority of trucks (95%) plying in the study area are manufactured in India as per the standard norms hence it is assumed that emission from these trucks will be similar, as emission norms are same for the vehicle used in India and is mandatory for the manufactures to follow emission norms under the Motor Vehicle Act.

Impact on Noise Levels and Mitigation Measures

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

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

Impact on Water and mitigation Measures

M/s SMW Ispat Pvt Ltd is committed for ZERO Discharge of waste water. Total water requirement is 5515 KLD including domestic requirement.

The waste generated from the industrial process will be 100 KLD which will be treated in ETP and reused in the process.

12 KLD phenolic water generated from coal gasifier will be used in ABC of rotary kiln for quenching. Standard SOP prescribed by CPCB will be followed for utilization of phenolic wastewater.

74 KLD waste water generated from domestic use will be treated in STP (capacity 75 KLD) and treated water will be used for plantation purpose, road washing and water sprinkling.

Terrestrial Ecology

Natural Flora and Fauna are important biotic components for environment. The various terrestrial biological components which can be influenced by proposed activities in the form of emissions.

No National Park, Sanctuary, Elephant or Tiger Reserve is situated within 10 km radius area surveyed around the project site. No migratory route of wild animals has been reported to have existed in the study area.

Biological Environment

Biological study is essential to understand the impact of industrialization and urbanization on existing flora and fauna of the study area. Studies on various aspects of ecosystem play an important role in identifying sensitive issues for under taking appropriate action to mitigate the impact, if required. The biological study was under taken as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area, to compare it with past condition with the help of available data, to predict changes in the biological environment as a result of present activities and to suggest measures for maintaining its health. A baseline survey was conducted to study floral and faunal diversity of the terrestrial and aquatic environment of the study area within the 10 km radius of the plant site.

The project site is located in industrial area. There is no forest land within study area industrial area is surrounded by agricultural land. Air Pollution controlling device will be installed in the plant to minimized the impact on local area. There shall not be any loss or reduction of species and habitat due to the project site. Project site is located in existing plant premises No

site clearance or vegetation will be removed.

During the EB study No Endemic, Rare, Endangered and Threatened (RET) species of flora and fauna were found in the study area.

There shall not be any impairment of ecological functions such as (i) disruption of food chains, (ii) decline in species population and or (iii) alterations in predator-prey relationships. Plant will be equipped with Air Pollution Control Device, No waste water will be release from production process, and green belt will be developed for noise pollution control and for maintaining balance in flora fauna habitat.

Solid Waste Generation

The solid waste generation in the proposed expansion activities are given in following table.

| Solid Waste | Quantity (TPA) | Disposal/Utilization |
|--------------------------------|----------------|---|
| Pellet Plant (Gasifier) | | |
| Cinder (Ash) | 23,625 | Will be Sold to Brick manufacturer |
| Tar Generation | 2600 KL | Will be Utilized in kilns of pellet plant. |
| Sponge iron plant | | |
| Dolochar | 26,400 | 26,400 TPA Dolochar will be used in captive power plant. |
| ESP Dust | 39600 | Will be used for brick manufacturing and land filling |
| Iron Ore Fines | 13,200 | This dust is coming out from screening area of Sponge Iron Plant and will be used in Pellet Plant |
| Coal Fines | 9,900 | Will be used in AFBC power plant by blending with coal. |
| Ash | 26,400 | Will be sold to brick manufacturer |
| CPP | | |
| Fly Ash | 46,200 | Land filling / levelling and will be sold to brick manufacturing units/ cement plants |

Impact on Socio-Economic Environment

M/s SMW Ispat Pvt. Ltd. is providing direct employment 2050 workers. The local persons have been given preference in employment as per the qualification and technical competencies. In order to mitigate the adverse impacts likely to arise in the proposed project activities and also to minimize the apprehensions to the local people, it is necessary to formulate an affective EMP for smooth initiation and functioning of the project. The overall impact on the socio economic environment will be significant.

5.0 Environmental Monitoring Programme

M/s SMW Ispat Pvt Ltd will be carry Environmental Monitoring on regular basis. The methodologies adopted for environmental monitoring are in accordance with the CPCB guidelines.

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

Ambient Air Quality Monitoring

Ambient air quality monitoring at 3 locations in and around the plant will be carried by NABL accredited lab on regular basis and reports will be submitted to MPCB regularly.

Water Quality Monitoring

Ground water quality & Waste water quality samples will be collected and analyzed by NABL accredited lab, ground water from different locations on quarterly basis and analyzed by NABL accredited lab. Reports will be submitted to MPCB, CPCB and MoEF.

Noise Environment

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

Fugitive emission

Monitoring of Ground level dust concentration/Fugitive emission along with gaseous pollutants viz SO₂, NO_x will be carried out periodically. Necessary control measures are being adopted to keep the secondary fugitive emission within limits.

6.0 Additional Studies

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

7.0 Project Benefits

The company has worked to ensure better infrastructure in villages by constructing community assets, providing good sanitation facility, and street lights, Improve the education facilities. CER funds will be spent and CSR fund will be spent as per company law depending on net profit

8.0 Environmental Management Plan

Environmental Management Cell

A separate environmental management cell will be established to implement the environment management plan. The environment management cell will be headed by Director. He will ensure the suitability, adequacy and effectiveness of the Environment Management Program. The cell is responsible for monitoring ambient air quality, stack emission, ambient noise in the plant and vicinity, waste water quality treatment and discharge, workplace air quality and maintenance of analytical instruments. Additional responsibilities of the cell include the following:

- Obtaining consent order from State Pollution Control Board.
- To co-ordinate with statutory bodies, functional groups of the plant & head office.
- Interactions with plant official for modification programme if any to improve pollution control devices / systems.
 - Conducting annual environmental audit and submit audit report to State pollution Control Board (SPCB);
 - Compliances of all the conditions mentioned in EC and Consents

- Submission of all statutory reports and returns.
- Conduct regular training programs to educate plant personnel on environmental awareness.
- Plantation and its maintenance with maximum survival rate
- Inform the management regularly about conclusions/results of monitoring and recommend environmental protection measures.

The following mitigation measures will be undertaken for the proposed project

Air pollution control measures:

Pellet Plant & Coal Gassifier

- The hot air generated from the pellets cooling will be recycled for use in drying of iron ore.
- The flue gases from the induration furnace of pellet plant will pass through high efficiency ESP and will be treated and outlet dust emission will be less than 50 mg/Nm³
- Bag filter with stack shall be provided with coal gasifier to control dust emission
- Dust extraction measures with swivel hood, ID fan will be provided at different loading, unloading and transfer points in the raw material handling section.

Sponge Iron plant and WHRB Power Plant

The gases generated from Sponge Iron project are re-used to generate electricity. The following pollution control measures are installed:

- The waste gases from rotary kiln are fed in the Waste Heat Recovery Boiler and coal/Dolochar fired AFBC boiler will be installed with ESP.
- In order to meet the statutory ground level concentration limit, suitable stack heights will be provided for proper dispersion. All stacks will be provided with port holes and working platform so that stack monitoring will be done as per norms.

AFBC based Power Plant

- AFBC based power plant will be installed with ESP followed by stack with adequate height.

All the stacks are equipped with continuous emission monitoring system along with remote calibration facility for gaseous parameters and connectivity with MPCB and CPCB server.

Control measures for Fugitive Emission

- Adequate dust suppression system in the form of water sprinklers will be provided at raw material yard, solid waste dump site and along the vehicular roads.
- At all the points, Dust Collectors/ dust suppression systems will be installed.
- Dedicated roads for vehicles carrying raw materials and products will be developed.
- Greenbelt all along the plant boundary covering 33 % of the total plant area]. will be developed under green belt.
- Fugitive dust generated from Raw Material Handling, Bentonite Grinding, Lime and Coal Grinding and Bentonite Transfer points will be collected using suction ducts and clean in Bag Houses
- Water sprinklers will be provided across the plant.

WATER POLLUTION

M/s SMW Ispat Pvt Ltd is committed for ZERO Discharge of waste water. Total water requirement is 5515 KLD including domestic requirement. The waste generated from the industrial process will be 100 KLD which will be treated in ETP and reused in the process.

12 KLD phenolic water generated from coal gasifier will be used in ABC of rotary kiln for quenching. Standard SOP prescribed by CPCB will be followed for utilization of phenolic wastewater.

74 KLD waste water generated from domestic use will be treated in STP (capacity 75 KLD) and treated water will be used for plantation purpose, road washing and water sprinkling.

NOISE POLLUTION

Regular maintenance of the various equipment, ear plugs/muffs will be provided for the personnel working close to the noise generating units. Further all the openings like covers, partitions will be designed properly to abate noise pollution.

SOLID WASTE DISPOSAL AND MANAGEMENT

The solid waste generated from each technological process units and modes of disposal is given elaborated in

GREEN BELT DEVELOPMENT

11.05 ha (33%) of the total land 33.4934 Ha will be developed for green belt development. Existing 400 - 500 no of plants are exist. Additional trees will be 27125 trees @2500 trees/ha will be planted as per MOEF&CC guideline. In addition to this at Plot No. R-2 & R-3 admeasuring 18000 sq.m, out of this 500 Sq m area will be reserved for bachelor hostel and on rest of the area it is proposed to develop additional greenbelt there by company to minimize pollution concentration level at rehabilitation village.

Environment Management Plan – Budget (Proposed)

The Project cost is Rs 380 Cr .The breakup of project cost is given in following **Table**. Total Rs. 655 lakhs as a capital investment and 100 lakhs as recurring cost has been earmarked for implementation of Environmental Management Plan for proposed expansion.

EMP Implementation Budget (Capital Cost and Recurring cost annum)

| Particulars | Capital Investment (Project phase) (Rs. In lacs) | Recurring cost (Operational phase) (Rs. In lacs/annum) |
|--|---|---|
| Air pollution control equipment | 400 | 30 |
| Continuous Emission Monitoring System | 25 | 10 |
| ETP for industrial wastewater treatment | 50 | 10 |
| STP for domestic wastewater treatment | 25 | 5 |
| Monitoring & analysis by MOEF /NABL accredited laboratories (Air, Water & Wastewater, Noise, soil) Solid & Hazardous wastes | 20 | 15 |
| Plantation & greenbelt development | 85 | 20 |
| Rain water harvesting & Piezometer with Telemetry | 50 | 10 |
| Total | 655 | 100 |

9.0 Conclusion

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

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

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