

Executive Summary

of

**Capacity Enhancement of Sponge iron plant from
2, 16, 000 TPA to 2, 73, 900 TPA by change in raw material mix;**

AND

**Capacity Enhancement of CPP (AFBC) from Existing
24 MW to 37 MW by**

- i. Replacement of indigenous coal with imported coal**
- ii. Modification in existing boiler and Turbine with additional new
Turbine;**

AND

**Capacity Enhancement of power plant (WHRB) from
14 MW to 22 MW;**

AND

**Capacity expansion of Ferro-alloy unit to manufacture 36,000 TPA
to 85,200 TPA Ferro Alloys by Installing 1 x 18 MVA and 4 X 1.5
MVA Submerged Arc Furnace;**

AND

**Installation of 66,000 TPA Sinter plant and 16500 TPA
Briquette plant**

**PROJECT PROPONENT
M/S VANDANA GLOBAL LIMITED**

At

**Siltara Industrial Growth Center, Phase-II, Siltara, Dist. Raipur,
Chhattisgarh
EIA Consultant**

Pollution & Ecology Control Services

Accreditation no.: NABET/EIA/1720/RA0101

EXECUTIVE SUMMARY

1.0 INTRODUCTION

The Existing plant of M/s Vandana Global Limited is located at Siltara Industrial Growth Center, Phase-II, Siltara, Dist. Raipur. The existing projects was accorded environmental clearance vide Ir.no. J- 11011/558/2007- IA II (I) dated 23rd December 2008. Total land in possession is 56.90 Acres (23.02 ha) leased by CSIDC. The nearest main city is Raipur which is 5.0 km and nearest airport is Raipur airport which is 21.5 Km (SE). The nearest habitation is Sankara Village which is 0.5 km at SE direction from the project site.

The project proponent wish to enhance capacity of DRI plant without any modification in existing plant and machinery but only change in Raw Material Mix. Further, Expansion in power plant of AFBC from 24 MW to 37 MW by Replacement of Indigenous coal with imported coal and Modification in existing boiler and Turbine with additional new Turbine and expansion of WHRB from 14 MW to 22 MW and expansion of manufacturing of Ferro alloy plant (36,000 TPA to 85, 200 TPA) and installation of Sinter plant (66000 TPA) & Briquette plant (16, 500 TPA). The enhancement and expansion of project will be carried out within the existing premises. The proponent made online application along with Form-1, Pre-feasibility report and other documents for proposing Terms of Reference (TORs) for undertaking detailed EIA study. The standard TOR has been issued vide letter No. J- 11011/558/2007- IA II (I) dated 24th Mar 2021 for undertaking EIA study for proposed expansion. The proposed expansion project attract the provisions of EIA Notification, 2006 and falling under Category A of Schedule, 3 (a) Metallurgical Industries (Ferrous and Non-ferrous). This is a brownfield steel project. This chapter includes the background information of the proposed project activities, resources availability, process details, sources of pollution and proposed control measures, etc.

Existing & Proposed Facilities the Plant

Sr. No.	Details of units	Capacity(TPA)		
		Existing	Proposed	Total capacity
1	Sponge Iron Plant	2,16,000	57,900	273900
2	Induction Furnace	3,09,000	Nil	3,09,000
3	Rolling Mills	2,16,000	Nil	2,16,000
4	Captive Thermal Power Plant (AFBC+WHRB)	38 MW	22 MW	60 MW
5	Ferro Alloy Plant (SiMn, FeMn, FeSi/Pig Iron)	36,000	49,200	85,200
6	Sinter plant	-	66,000	66,000
7	Briquette plant	-	16,500	16,500

Location of the Project

The Existing plant of M/s Vandana Global Limited is located at Siltara Industrial Growth Center, Phase-II, Siltara, Dist. Raipur. The enhancement and expansion of project will be carried out within the existing premises. Total land in possession is 56.90 Acres (23.02 ha) leased by CSIDC. The nearest main city is Raipur which is 5 km and nearest airport is Raipur airport which is 21.5 Km (SE). The nearest habitation is Sankara Village which is 0.5 km at SE direction from the project site. The nearest highway is NH 200 which is 1 km in East direction. The details of environmental setting are given in following Table and study area of 10 km radius are given in following Figure.

DETAILS OF ENVIRONMENTAL SETTINGS

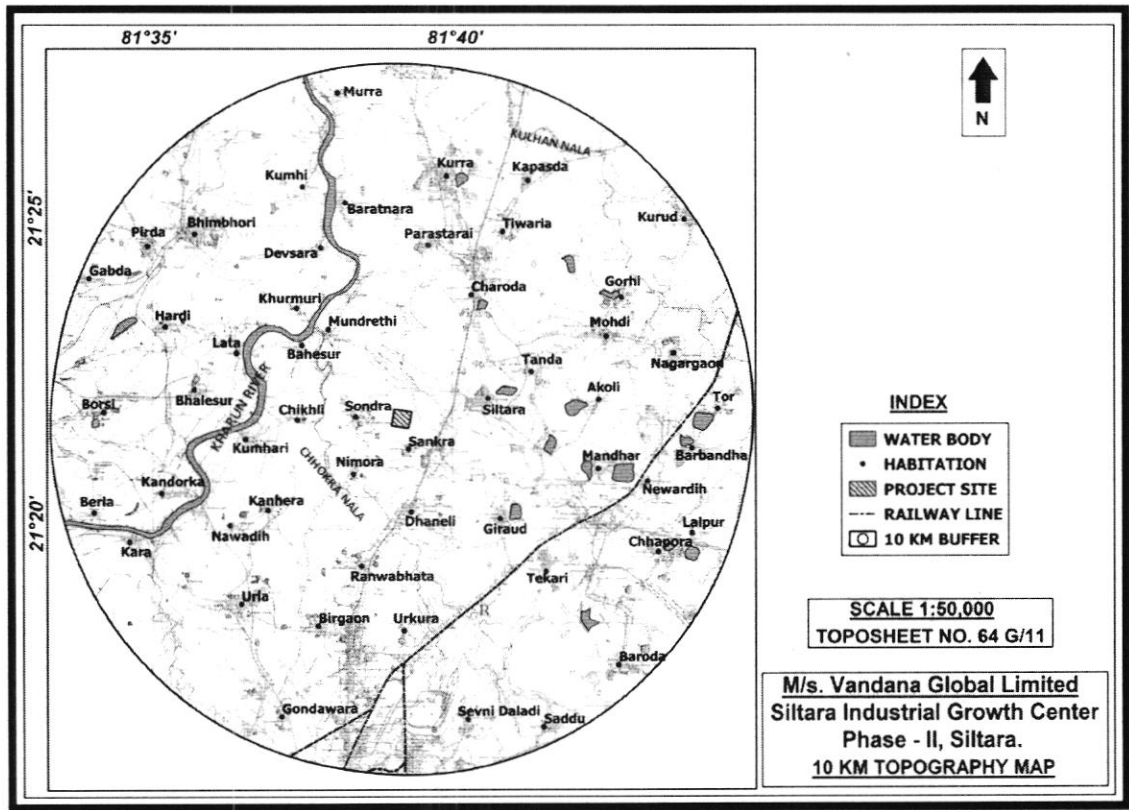
1	Location	Siltara Industrial Growth Center, Phase-II, Siltara, Dist. Raipur
2	Coordinates	A. 21°21'55.33"N 81°39'19.67"E B. 21°21'58.02"N 81°39'2.41"E C. 21°21'41.59"N 81°38'59.65"E D. 21°21'39.11"N 81°39'16.76"E
3	Nearest Highway	SH- 2 : 1 Km (E) NH- 200 : 1 Km (E)
4	Nearest Airport	Raipur Airport : 21.5 Km (SE)
5	Nearest Railway Station	Mandhar Railway Station : 5.5 Km (ESE)
6	Nearest Village	Sankra : 0.5 Km (SE)

7	Nearest water body	Kharoon River : 3.5 Km (NW) Chhokra Nala : 2.0 Km (SW) Kulhan Nala : 7.5 Km (NE)
8	Forest	Nil
9	School	1. Govt. Primary School : 1.5 Km (NE) 2. Jagmohan Lal Higher Secondary School: 2.0 Km (ENE) 3. Swami Atamanand English Medium School: 2.0 Km (NE)
10	Hospital	1) Sai Kripa Hospital: 1.0 Km (E) 2) Health and Wellness Centre: 2.0 Km (E) 3) ESI Medical : 2.5 Km (NNE)

List of major operational industries located within 10 km radius of the plant site (i.e. study area) is given below:

List of Major Industries in 10 Km Radius

Sr. No	Name of the Industry	Type	Distance & Direction
1	M/s. Sarda Energy & Minerals Ltd.	Pellet, DRI & Power	2.5 km.ESE
2	M/s. Jaysawal Neco Ltd	DRI &Power	1.0 km. ESE
3	M/s .Mahamaya Sponge Iron (P) Ltd.	Sponge Iron	3.0 km. ESE
4	M/s. Mahendra Sponge & Power Ltd.	Sponge Iron	0.5 km. WSW
5	M/s. Hira Ferro Alloys Ltd.	Ferro Alloys	7.0 Km. SW
6	M/s. The Metalic Alloys	Ferro Alloys	0.5 Km. N
7	M/s. SKS Ispat& Power Ltd.	DRI & Power	2.5 km. NW
8	M/s. Euro Prateek Sponge & Iron Ltd.	DRI &Power	2.5 km.NNW
9	M/s/ Jagdamba Power & Alloys Ltd.	Power	1.0 km. SE
10	M/s. Drolia Power &Ispat	DRI & Power	2.0 km. N
11	M/s. Nakoda Ispat Limited	DRI & Power	1.0 km. SSW
12	Aarati Sponge & Power Ltd.	DRI &Power	2.0 km. WNW
13	API Ispat& Power Tech Ltd	DRI & Power	2.0 km. NW
14	Drolia Electrosteel (P) Ltd.	DRI	2.0 km. NNW
15	S.K. Sarawagi & Company (P) Ltd.	DRI	0.5 km. N

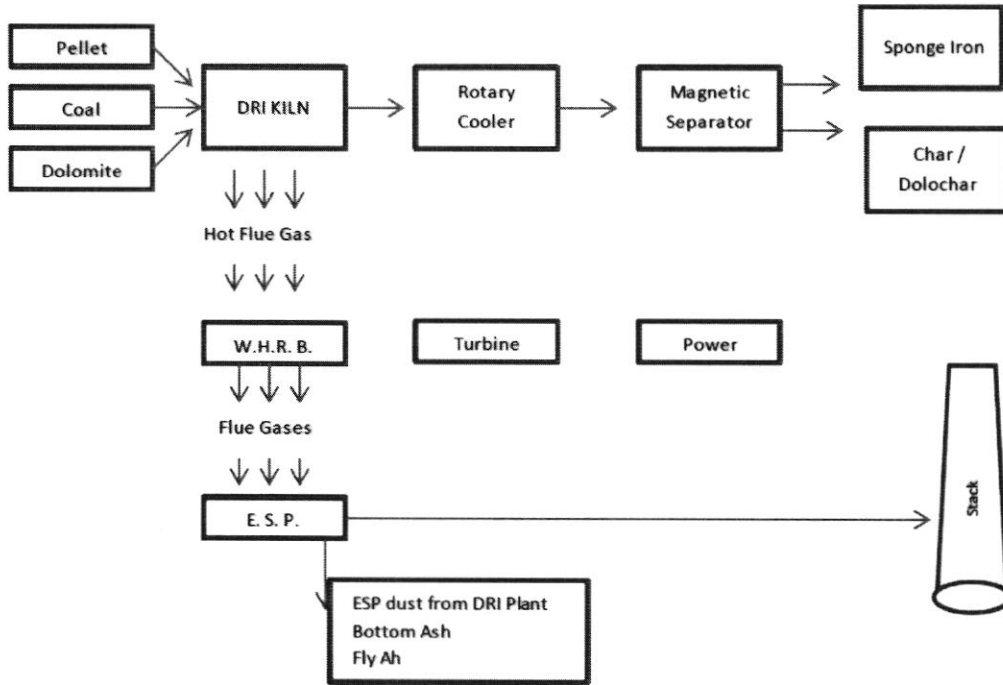


Source: SOI Toposheet

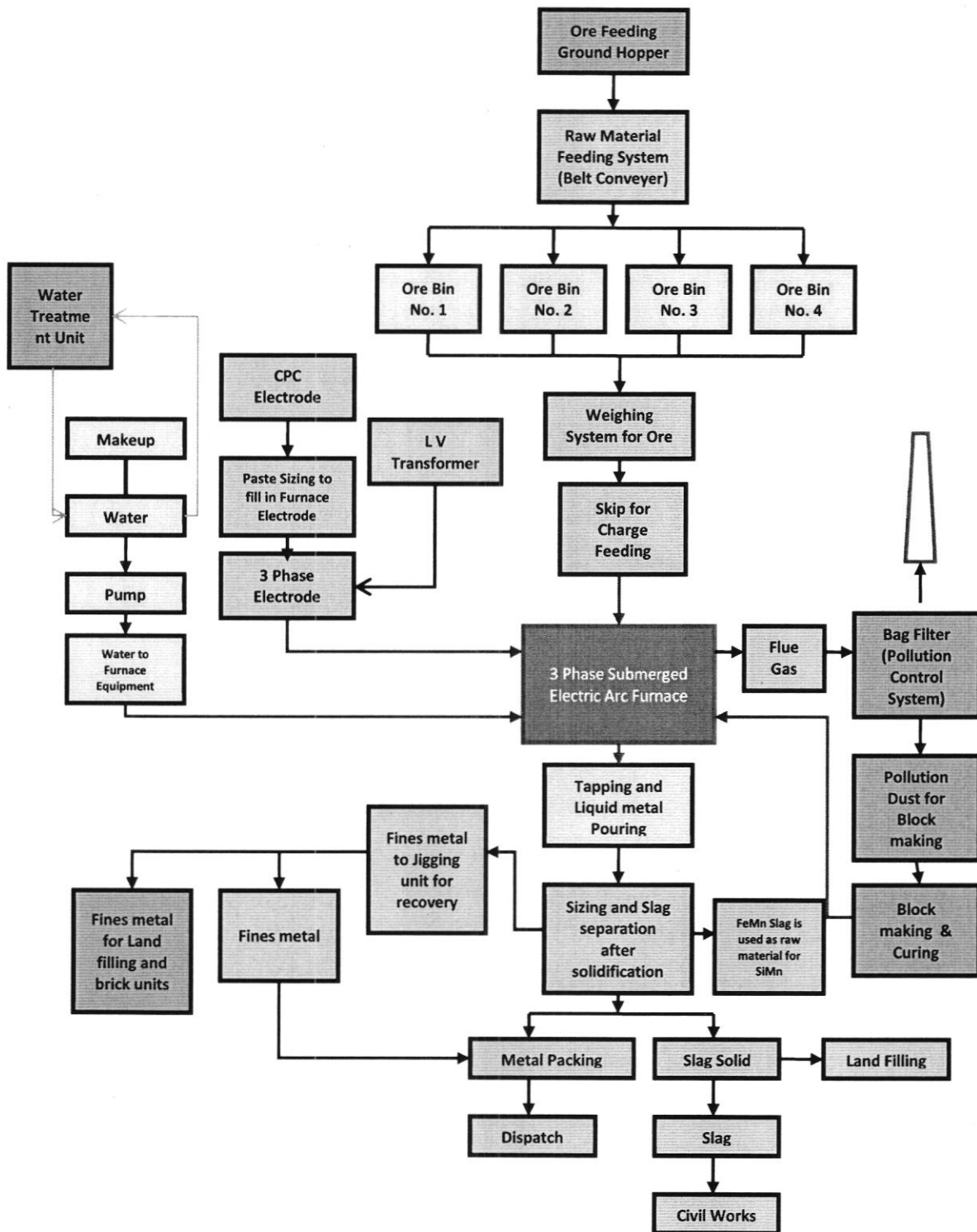
Topographical Map (10 km radius)

2.0 PROJECT DESCRIPTION

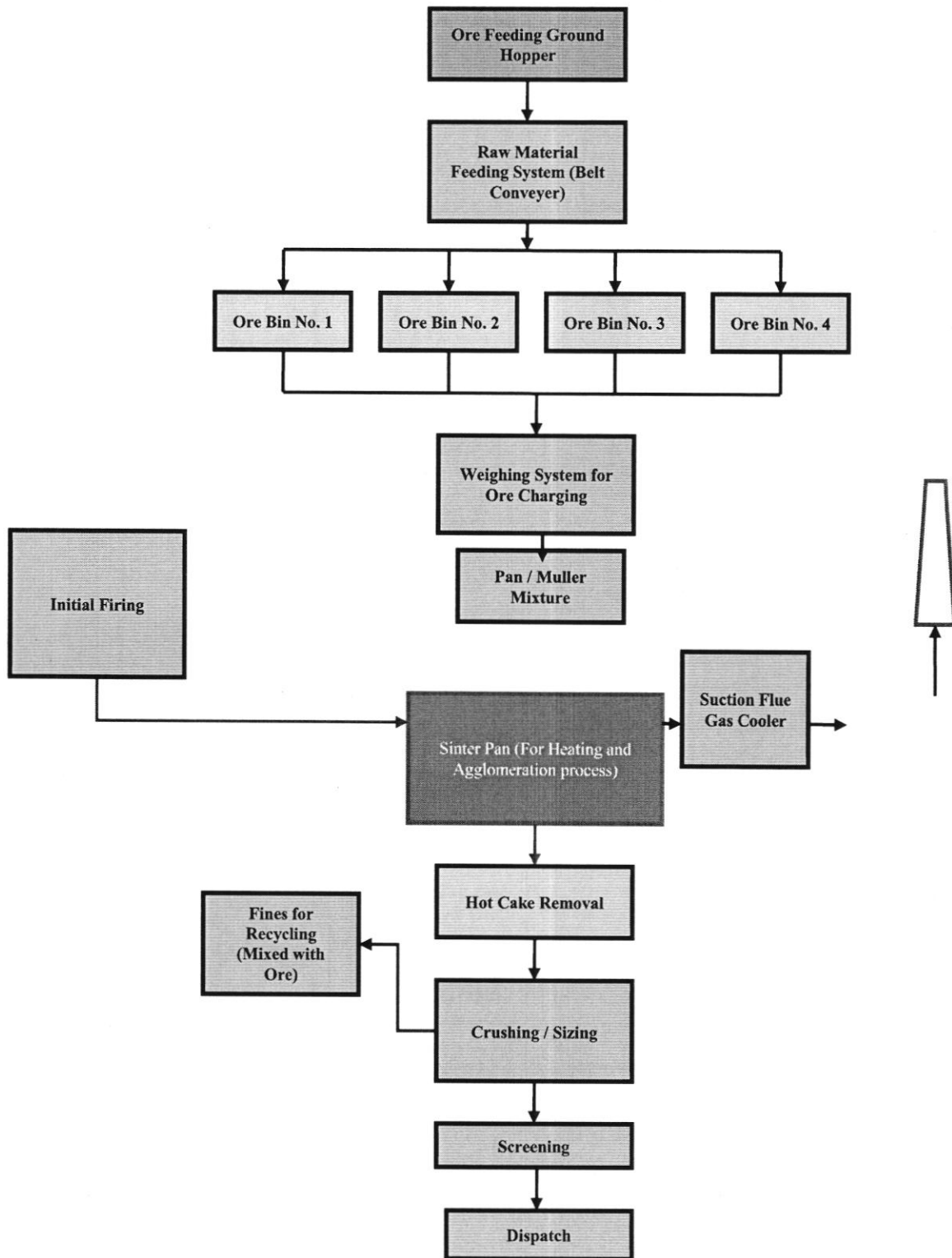
Process Flow Diagram of DRI Kiln with proposed change in Raw Material Mix



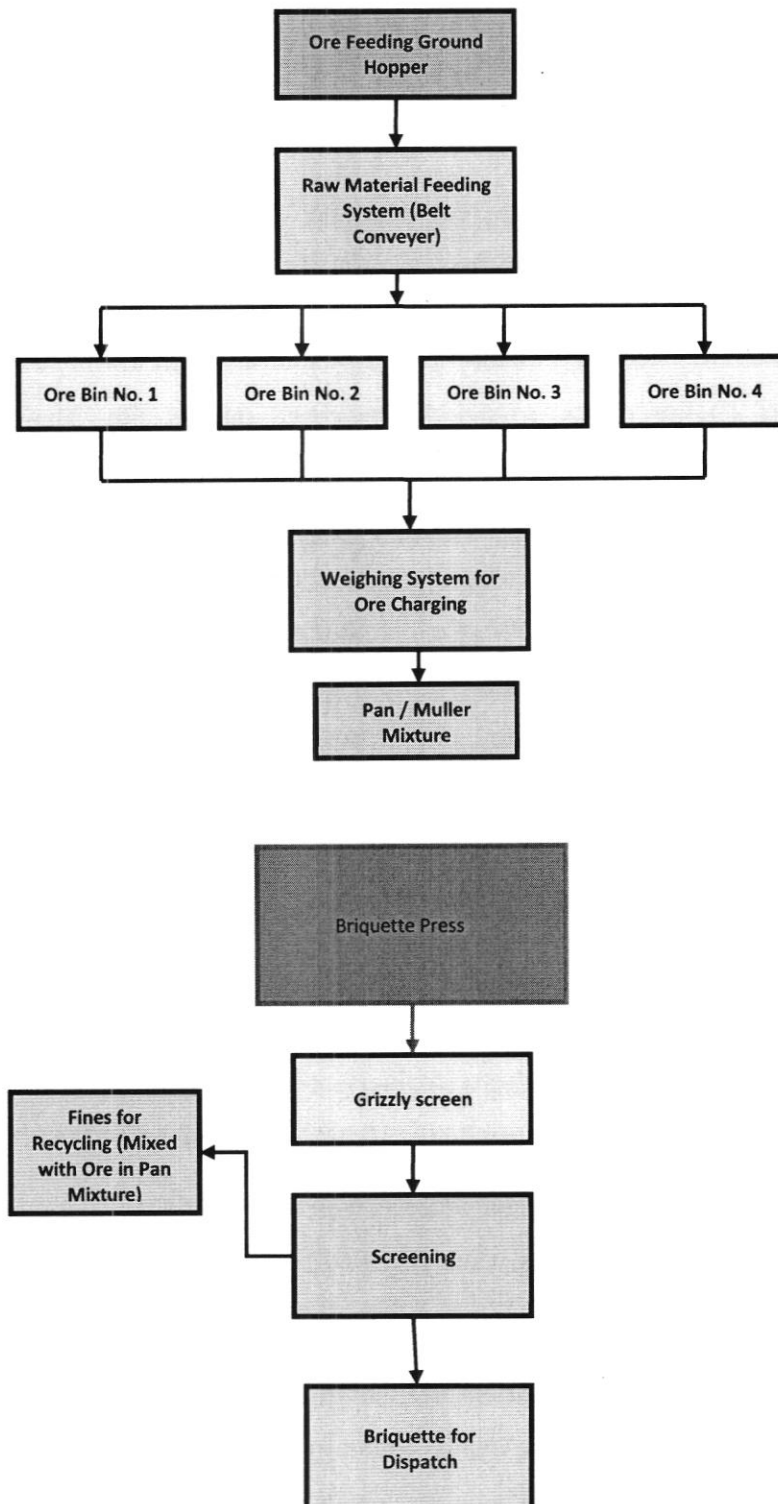
Process Flow Diagram of Ferro Alloy Unit



Process Flow Diagram of Sinter Plant



Process Flow Diagram of Briquette Unit



Capital Cost

The existing project cost is of Rs332.0 Cr and estimated project cost for proposed expansion phase will be Rs30Cr. And Budget for Implementation of Environmental Management Plan is 4.0 Cr for proposed expansion

3.0 DESCRIPTION OF THE ENVIRONMENT

Air Environment

The baseline environmental quality for the period of March to May 2021 was assessed in an area of 10 km radius around the proposed project site. The predominant wind directions are South West and West. The ambient air quality monitored at 8 locations selected based on predominant wind direction, indicated the following ranges;

PM₁₀ : 34.0 to 89.1 µg/m³.

PM_{2.5} : 20.0 to 48.6 µg/m³

SO₂ : 8.0 to 19.0 µg/m³

NO_x : 18.0 to 38.0 µg/m³

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 16 samples including eight 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.

The data indicates that the ground water as well as the surface water quality are below the stipulated standard for drinking water (IS 10500 – 2012).

Noise Environment

Noise levels measured nine 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.

Land Environment

The characteristics of the soil sample were compared with different depths for respective parameters in three stations. The soil analysis report indicates that the soil in the area are capable of supporting plant growth.

Biological Environment

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.

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.

4.0 Anticipated Impacts & Mitigation Measures

Sl.	Name of Process	Operation	Emission released waste generated	Types of pollution	Pollution Control Measures
Existing					
1.	Sponge Iron plant with WHRB & ABC power plant	DRI Kiln reduction of iron at 900-1100°C Generation of Steam from biomass & waste heat from DRI	CO, SO ₂ , NO _x & Dust TSP, CO ₂ , SO ₂ , NO _x & generation of fly and bottom ash	Air Pollution & Thermal Pollution & Land pollution	ESP & Tall Stack
3.	Coal storage yard/ shed	Storage of raw and finished coal	Fugitive dust emission	Air pollution & noise pollution and fire risk	Water sprinkling System 90% of the dust controlled by these methods. Remaining 10% dust should not travel longer distance due to weight
4.	Ash delivery point	-	-	-	Bag filter with central dust collection system
5.	Ferro Alloys Plant	Ferro and silico Manganese	PM and SO ₂	Air Pollution & Thermal Pollution	Forth hole extraction followed by bag filter & Stack
6	SMS (Induction furnace) Hot Steel	Melting of DRI in IF at 1600°C, Hot metal, Casting of refined liquid	Water vapour, waste water containing iron scales	Air, Thermal, Water, Noise & Soil	Bag filters with sparks arrester and swivel hood No air pollution

	Rolling Mill	steel in moulds of billet. Direct rolling technology based hence reheating furnace is not required	CO ₂ , Oil & Grease from Scrap, IF, EAF, LF slag Water, noise pollution	pollution No air pollution however solid waste such as End cuts and misrolls shall be used in SMS	control equipment is required, water is recirculating system hence only make up water is required noise pollution will be controlled by thick plantation
7	Sinter Plant	Storage of raw material and output.	Fugitive dust emission	Air pollution & noise pollution	Water sprinkling System 90% of the dust controlled by these methods.

Prediction of Air Quality

The Cumulative GLC for PM₁₀ comes out to be 1.78 µg/m³ at 1.2 km in NW direction and for SO_x is 2.58 µg/m³ at 1.1 Km in NE direction and for NO_x is 1.99 µg/m³ in 1.1 Km in NE Direction. The predicted ground level concentrations obtained when superimposed on the baseline concentrations are within the prescribed NAAQ Standards.

5.0 Environmental Monitoring Programme

M/s Vandana Global Ltd are being carry out the Environmental Monitoring on regular basis. The Ambient Air Quality, Meteorological Data, Stack Emissions, Fugitive Emissions, Water Quality, Wastewater Quality, Noise Levels etc. will be monitored as per the SPCB/CPCB norms. The methodologies adopted for environmental monitoring will be in accordance with the CPCB guidelines. After expansion same practice will be followed as per SPCB/CPCB norms.

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.

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,

M/s Vandana Global will developed infrastructure activities within the villages As per the Office Memorandum No. 22-65/2017-IA.III dated 20th October 2020 based on the issued raised at the time of public hearing the CER will be detailed in the Final EIA Report.

- As per the Office Memorandum No. 22-65/2017-IA.III dated 25th February 2021, CER shall be the part of Environment Management Plan.
- 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 management plan. The group will be headed by a Senior Manager (production). The group 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 and discharge, quality of water bodies receiving effluent, 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);

- Submission of all statutory reports and returns.
- Conduct regular training programs to educate plant personnel on environmental awareness.
- Inform the management regularly about conclusions/results of monitoring and recommend environmental protection measures.
- Environmental Appraisal (Internal) and Environmental Audit.

MITIGATION MEASURES

There will be two major source of air pollution in the plant, fugitive emissions from various material handling and transfer points and flue gases generated from various combustion units. Flue gases generated are cleaned in the ESP and Bag Filters and discharged through stack, so that the dust concentration is well within the prescribed standard. Height of the all the flue gas discharge facilities is designed as per CPCB norms.

Proper Dust Suppression is existing in the premises, sprinkling on internal roads, regular check up & maintenance of vehicles, it will be ensured that all trucks/dumper will be covered by Tarpaulin.

Transportation

- Raw material & Finished Products is transported by road.
- It will be ensure that all trucks carrying raw material are tarpaulin covered.
- Internal roads are Tarrred / Concreted with installation of water sprinklers to suppress dust due to transportation

Water Environment

The company follows “the zero wastewater discharge concept” and the entire wastewater is recycled to the plant for various uses. The domestic wastewater will be treated in Packaged Type STP. As no wastewater will be discharged outside the plant premises, there will be no impact on the water quality of any surface water bodies of the area.

Noise Environment

Noise from fans, centrifugal pumps, electrical motors etc. will be kept in control so that the ambient noise level shall not exceed 75dBA during daytime and 70dBA during night time.

Noise pollution control measures will be provided in respective departments by way of providing silencers soundproofs cubicles / covers and proper selection of less noise prone machinery and by development of green belt.

Solid Waste Generation

- Dolochar are being send to Captive power plant for use as fuel
- ESP dust and Fly ash/ bottom ash are selling to brick manufacturing unit
- SMS/IFD slag/ Ferro slag selling to authorized vendor

Plantation & Green belt

Avenue plantation within the plant and green belt development will be done. At present 3.9 Acre land is developed as a greenbelt within the plant premises and 5.5 Acre land is developed along the periphery of plant boundary wall (outside the plant). In addition to this, CSIDC has allotted 20.0 Acre land in Siltara to M/s Vandana Global Ltd for Plantation purpose (Sai Krupa hospital up to Sarda Energy Ltd)

Rain Water Harvesting System

M/s Vandana Global Ltd are implementing Rain water harvesting system which improves the water table of area. Rain water Harvesting for 152332.1 Cubic Meter m³/Year of water. The existing project cost is of Rs332.0 Cr and estimated project cost for proposed expansion phase will be Rs30Cr. The break o EMP cost for existing and proposed project is given in following Table.

Project Cost and Environmental Management Cost

Project cost & EMP cost for existing & proposed plant

Sr. No.	Description	Existing Kiln- 1, Kiln- 2, AAFC-1, AFBC-2, SAF- 1, SAF-2, SMS & Rolling mill	Proposed Ferro- 18 MVA, Ferro- 4x1.5 MVA, Sinter plant & briquetting plant
1.	Project cost	332.00 Cr (Depreciated value of existing plant)	30.0 Cr.
2	Environment Management Plan(EMP) cost	33.55 Cr	4.0 Cr

Details of EMP cost (Existing & proposed)

Sr. No.	Component	Existing		Proposed	
		Description	Capital cost (Cr)	Description	Capital cost (Cr)
1	Air pollution control	Stack, ESPs & bag filters	23.50	Bag filter system & stacks	2.85
2	Water pollution control	Waste water treatment	1.50	-	0.5
3	Solid waste management	Ash silo, ash handling system & wet scrubber	6.50	-	-
4	Green belt	Plantation (New Plantation + Maintenance of Existing).	0.25	Development of new green belt	0.20
5	Environmental monitoring	Environmental monitoring equipments (Manual & online)	0.80	-	0.20
6	Housekeeping & sweeping machine	Housekeeping	1.00	Housekeeping	0.25
Total			33.55		4.0

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.