

Executive Summary

VSP Udyog Pvt. Ltd.

EXPANSION PROJECT

Installation of 4 x 20 Tonnes Induction Furnaces
along with Ladle Refining Furnace, 3 Strand CCM
and expansion of Wire Rod/Rolling Mill-2 capacity
from 1,20,000 to 2,50,000 TPA

Banskopa, PO-Bamunara, Durgapur,
Dist: Paschim Bardhaman, West Bengal

2022

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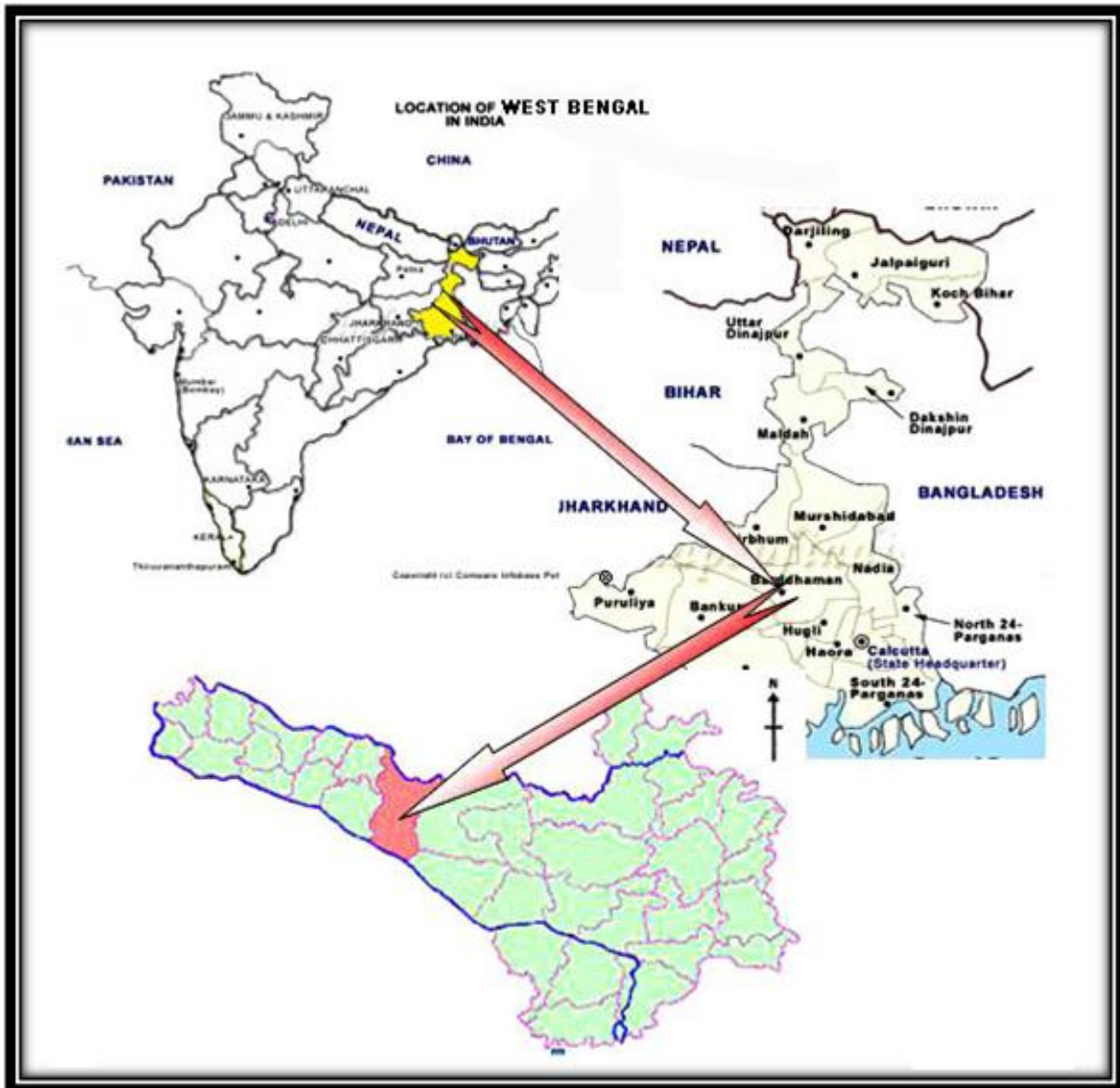
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1 Project Name and Location

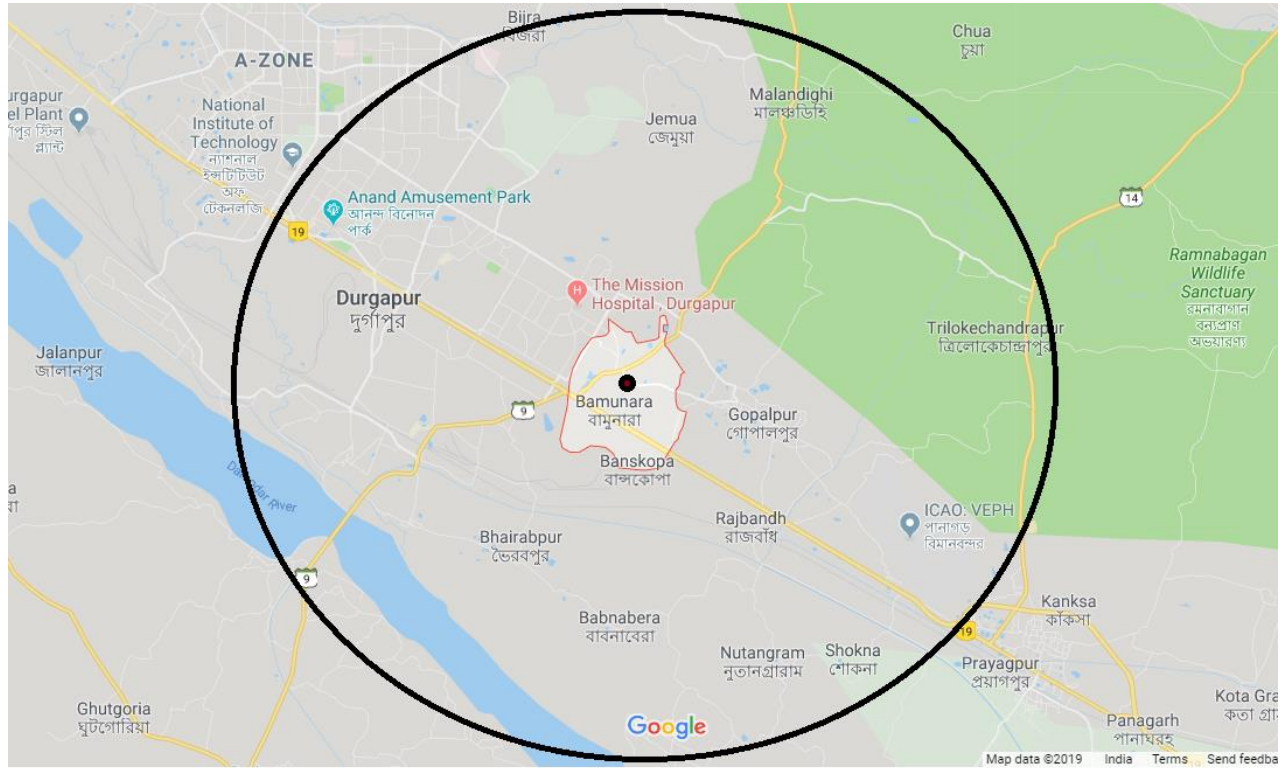
VSP Udyog Pvt. Ltd. is one of the well known manufacturers engaged in making durable range of Billets. The existing manufacturing unit is located at Banskopa, PO-Bamunara, Durgapur, Dist. Paschim Bardhaman, West Bengal, PIN 713212, JL No.65, Khatian No.3743, 3825, J.L.No.58, Khatian No.2374, 2885, 3085, 2884 on a land of 21.7 acres (88098.62 sqm).

The latitude and longitude of the project site is 23°29'41"North and 87°22'30"East respectively.

Location of Project Site



Location of Project Site on Google Map



10 KM RADIUS OF PROPOSED PROJECT SITE AT BAMUNARA INDUSTRIAL AREA, BAMUNARA, DURGAPUR, W.B.

2 Products and capacities

Particulars	Existing	Subsequent Modification/Addition	Total Production Capacity
Induction Furnace	2 no 8 T 1 no 15 T	4 no 20 T	-
M.S. Billets	90600 TPA	264000 TPA	354600 TPA
Rolling mill -1	80000 TPA	-	80000 TPA
Wire Rod/ Rolling mill -2	120000 TPA	130000 TPA	250000 TPA
Ladle Refining Furnace	-	25 Ton Capacity per Ladle	25 Ton Capacity per Ladle

Particulars	Existing	Subsequent Modification/Addition	Total Production Capacity
CCM	4/7 Mtrs 2 Strand	6/11 Mtr 3 Strand	

3 Requirement of land, raw material, water, power, fuel, with source of supply

- **Land:** The existing manufacturing unit is located at Banskopa, PO-Bamunara, Durgapur, Dist. Paschim Bardhaman, West Bengal, PIN 713212, JL No.65, Khatian No.3743, 3825, J.L.No.58, Khatian No.2374, 2885, 3085, 2884 on 21.7 acres (88098.62 sqm) land. Expansion will be on the said land.
- **Raw material:**

Induction Furnace (Qty. Required for 1 Ton Billet Production)		
Sponge Iron made by Natural Iron Ore	T	0.118
Sponge Iron made by Pellet	T	0.793
Pig Ion	T	0.021
Cast Iron Boulder (205-1)	T	0.074
Mild Steel / Cast Iron (70-250)	T	0.029
Scrap	T	0.084
Cast Iron (2-15)	T	0.118

- **Water:** The required water will be sourced from Ground water. The company has already obtained the permission for the same. The estimated demand for expansion project is 100 KLD for meeting the entire requirements for domestic consumption, gardening and Industrial uses. The water will be also available from Rain Water Harvesting (RWH) system. The details break up of existing and proposed water requirement is given below:

Particulars	Required for Existing Plant (KLD)	Requirement for Proposed Plant (KLD)	Total (KLD)
Water for cooling (Make up)	57	97	154
Domestic Purpose & other uses	3	3	6
Total	60	100	160

- Water supply is obtained from Ground water.
- 5.42 KLD water will be available from Rain Water Harvesting (RWH) system.
- **Power:** 20 MVA power is already available in the factory with the help of WBSEDCL. Power (approx. 20MVA for expansion project) can be enhanced with the help of them (WBSEDCL).
- Apart from this there are D.G. sets of 2X125 KVA, 1X250 KVA, 1X500 KVA as backup unit.

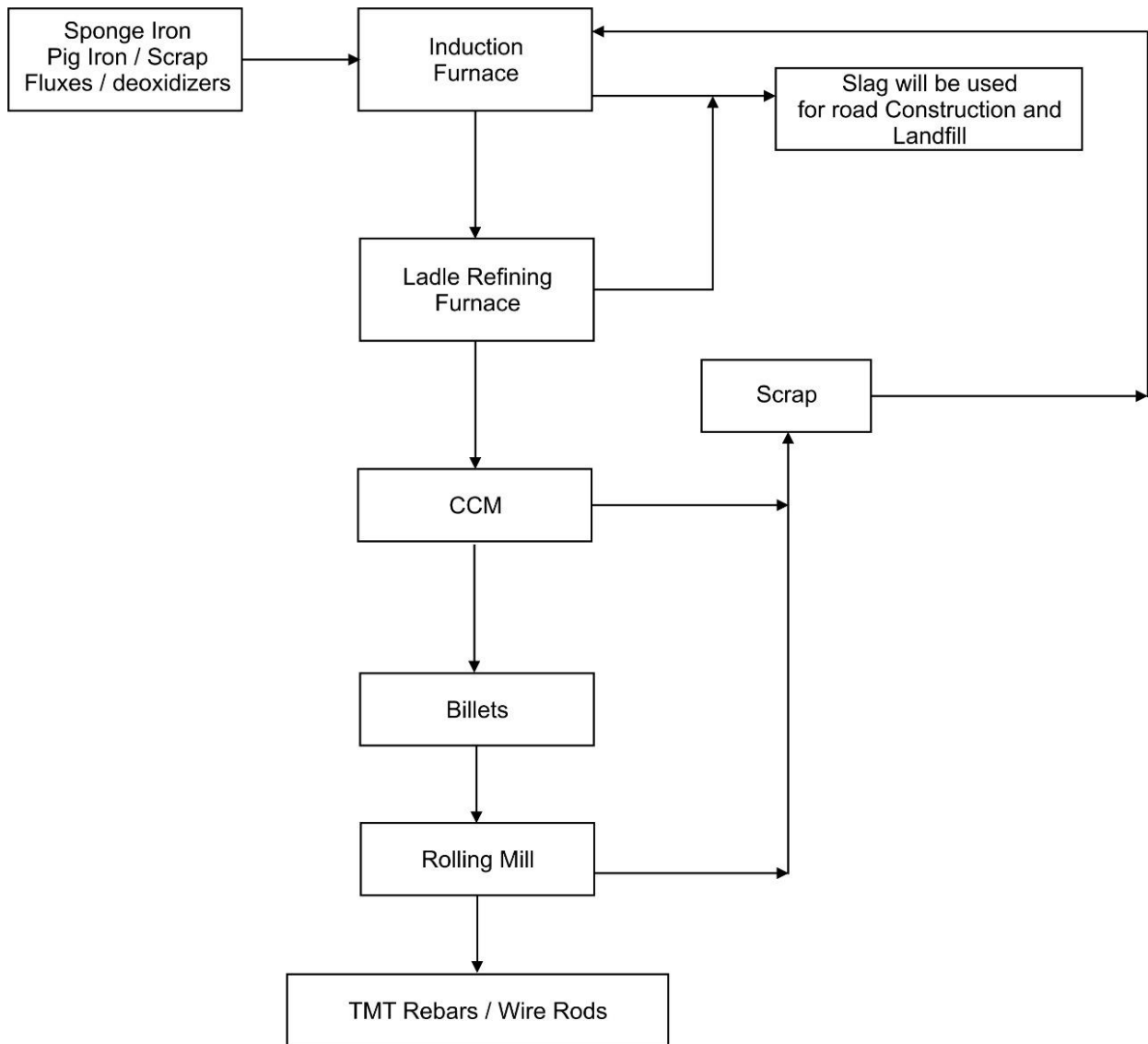
Power	Existing	Additional
Power from WBSEDCL	20 MVA	20 MVA
DG Set	1X125 KVA	NIL
	1X250 KVA	
	1X500 KVA	
	1X125 KVA	

- **Fuel:** The only fuel required is Diesel. It will be required for Existing D.G. approx. 1000 KL per month.
- **Manpower:** The total manpower for the proposed project is estimated at 310 numbers. The required manpower will be available locally. The implementation of industrial laws and regulations and locational factors of labour employment will also have to be considered.

Manpower	Existing Units	Proposed Expansion
Permanent	237	50
Contract	226	260
Total	463	310

4 **Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.**

The proposed project includes installation of 4x20 T Induction furnaces for production of 264000 TPA M.S. Billet along with Ladle Refining Furnace (25 Ton Capacity per Ladle), 3 Strand CCM and expansion of Wire Rod/Rolling Mill capacity from 1,20,000 to 2,50,000 TPA



Gaseous emission: Air in and over the plant area and beyond its boundaries gets polluted with gases, fumes and dust particles emanating from the processes, chimneys, transfer points of conveying and handling equipment. The air pollutions in the steel plant are mainly dust & gases like sulfur dioxide, carbon monoxide, nitrogen oxide, etc.

Liquid effluent: There will not be any process waste water (or) cooling water blow down from the SMS as closed circuit cooling system will be adopted. Closed circuit cooling system will be adopted in cooling of Billets and TMT Bars/Structural steel/MS Rounds/Strips. Therefore there will not be any waste water generation from process and cooling in the steel plant. Only domestic wastewater will be generated. Sanitary waste water (approx. 8 KLD) will be treated in septic tank followed by soak pit.

Solid and hazardous waste: Solid waste will be generated from the following area.

Type of Solid Waste	Estimated Generation (T/Month)	Process of Disposal
Slag from SMS (new project)	320	Slag will be crushed and after recovery of iron by magnetic separator, the inert material will be used in road construction and remaining amount is planned to be dumped in an environmental friendly manner in a separate area.
Slag from LRF	15	Slag will be used for land fill.
Scrap	40	Re-melted in the process.
Dust from Air pollution control system	320	Land Filling, making of fly ash bricks.
Mill scale from rolling	30	Will be recycled in Induction furnace.

5 Measures for mitigating the impact on the environment and mode of discharge or disposal

Air Pollution:

The sources of air pollution from the plant activities are as follows:

- a) The emission from Induction furnace during transfer of raw materials
- b) Fumes from the Induction furnace
- c) Fugitive emission during breaking of ferro-alloys and packing

Air in and over the plant area and beyond its boundaries gets polluted with gases, fumes and dust particles emanating from the processes, chimneys, transfer points of conveying and handling equipment. The air pollutions in the steel plant are mainly dust & gases like sulfur dioxide, carbon monoxide, nitrogen oxide, etc.

Existing and Proposed Air Pollution control devices: The performance of the existing APC has been discussed below.

Existing Stack No.	Stack Attached to	Stack height (m)	Dia of Stack (m)	Temp. (⁰ C)	Velocity (m/s)	PM (mg/Nm ³)	APC System & Air Volume As given in Test Report
1.	1 Nos. 8 T Induction Furnace	22.5	0.67	49	12.76	33.0	Spark Arrestor & Bag Filter Volume-14694 Nm ³ /hr
	1 Nos. 8 T Induction Furnace	22.5	0.67	53	13.07	37.0	Spark Arrestor & Bag Filter Volume-14890 Nm ³ /hr
	1 Nos. 15T Induction Furnace	22.5	0.67	71	14.62	33.0	Spark Arrestor & Bag Filter Volume-15792 Nm ³ /hr
2.	Re-Heating Furnace	32	0.92	187	7.43	29.0	Nil
3.	1x125 KVA DG	3.0	0.1	162	13.84	<75	Nil
4.	1X250 KVA DG	3.0	0.1	162	13.84	<75	Nil
5.	1X500 KVA DG	3.0	0.1	162	13.84	<75	Nil
6.	1X125 KVA DG	3.0	0.1	162	13.84	<75	Nil

For proposed Induction furnace (4x20T), there will be installation of four nos. of APC system comprises of Bag filter, spark arrestor, ID Fan along with 30m high common chimney for disposal of clean gas.

Proposed Stack No.	Stack Attached to	Stack height (m)	Dia of Stack	Temp . ($^{\circ}$ C)	Velocity (m/s)	PM (mg/Nm^3)	APC System & Air Volume As given in Test Report
1	1 Nos. 20 T Induction Furnace	30	Bottom 2800 mm Top 1800 mm	60-80	22	22	Bag Filter Volume-75000 Nm^3/hr Each
	1 Nos. 20 T Induction Furnace	30	Bottom 2800 mm Top 1800 mm	60-80	22	22	Bag Filter Volume-75000 Nm^3/hr Each
	1 Nos. 20 T Induction Furnace	30	Bottom 2800 mm Top 1800 mm	60-80	22	22	Bag Filter Volume-75000 Nm^3/hr Each
	1 Nos. 20 T Induction Furnace	30	Bottom 2800 mm Top 1800 mm	60-80	22	22	Bag Filter Volume-75000 Nm^3/hr Each

Technical Details of Proposed APC:

Gas volume for induction furnaces	:	4 nos x 75000 Nm^3/hr each capacity
Gas volume for Ladle furnace	:	1 no x 20000 Nm^3/hr each capacity
Total Gas Volume	:	320 000 Nm^3/hr
ID Fan	:	4 nos x 80000 Nm^3/hr each capacity
Temperature	:	Exhaust gas temperature at tip of stack – 60 to 80 $^{\circ}$ C
Static pressure at operating temp.	:	650mmWG
Speed	:	900RPM
Recommended motor rating	:	240KW each motor
Mode of construction	:	TISCO/SAIL

Bag Filter for Induction furnace	
Gas volume	320000 N m ³ /hr
Air to Cloth ratio	1.4 m ³ /min/m ²
Total filtering area	Net: 3597m ² , Gross: 3997m ²
No. of Filter Bag	2340Nos.
No. of Module	12 Nos
No. of Filter Bag in each module	195 Nos
Bag size (dia x long)	Ø158 mm,3660mm
Compressed air quantity	333.75 CFM
Pressure drop across the bag filter	600mmwg
Size and qty. of solenoid valve	40NB , 240 qty
Size of Rotary Air lock	250x250NB
Geared motor	3HP
Pulse duration	110 Milli seconds
Pulse Interval	10 - 300 second
Expected outlet Particulate Matter	outlet emission – 20 mg/Nm ³ .
Stack diameter (m)	Bottom dia 2800mm and top dia 1800 mm
Flue gas velocity (m/sec)	22

The dust concentration level in the chimney will be periodically monitored. Corrective steps will be taken, if the concentration is not as per the acceptable limits. The particulate concentration from the bag filters will remain within 50 mg/Nm³.

Raw material handling can cause dust generation at the point of storage and transportation. The fugitive dust can have adverse impact on air quality inside the plant and its immediate surroundings. This would be prevented by spraying water at storage yard area.

Ambient air quality monitoring stations in and around the premises will be done as per direction by West Bengal Pollution Control Board (WBPCB).

Water Pollution:

There will not be any process waste water (or) cooling water blow down from the SMS as closed circuit cooling system will be adopted. Closed circuit cooling system will be adopted in cooling of Billets and TMT Bars/Structural steel/MS Rounds/Strips. Therefore there will not be any waste water generation from process and cooling in the steel plant. Only domestic wastewater will be generated. Sanitary waste water (approx. 8 KLD) will be treated in septic tank followed by soak pit.

Solid waste:

The solid waste generated is in the form of slag. Slag is collected from the point of arising. Proper slag handling and disposal system is maintained.

Type of Solid Waste	Estimated Generation (T/Month)	Process of Disposal
Slag from SMS (new project)	320	Slag will be crushed and after recovery of iron by magnetic separator, the inert material will be used in road construction and remaining amount is planned to be dumped in an environmental friendly manner in a separate area.
Slag from LRF	15	Slag will be used for land fill.
Scrap	40	Re-melted in the process.
Dust from Air pollution control system	320	Land Filling, making of fly ash bricks.
Mill scale from rolling	30	Will be recycled in Induction furnace.

Noise Pollution:

Many operations in the steel plant will produce objectionable level of noise which may not be practicable to eliminate entirely, by in most areas it can be brought down to the acceptable level. The major noise generating areas are power and blowing station, compressed air station, induction furnace plant, steel melting shop, etc. various measures proposed to reduce the noise pollution includes reduction of noise at source, provision of acoustic lagging for the equipment

and suction side silencers, selection for low noise equipment, isolation of noisy equipment from working personnel, etc.

Monitoring of Noise will be carried out near the high noise generating areas inside the units. Beside this necessary precaution will be taken to minimize the noise generation.

Noise may be sourced from the following areas:

- Raw Material Handling Sections
- Charging operation, Product handling, Slag crushing
- Generator Area
- Compressor, Pumps, Fans
- Traffic Movement

Following mitigative measures will be taken to minimize the noise.

- ✓ Appropriate specifications of Equipment / Machinery.
- ✓ Proper and timely oiling, lubrication and preventive maintenance is carried out for the machineries and equipments.
- ✓ Well lubrication of the rotating equipments.
- ✓ Provision of enclosures to reduce noise transmission.
- ✓ Provision of vibration Isolators to reduce vibration.
- ✓ To minimize the adverse effect on the health, ear muffs/ earplugs are provided to the workers working under high noise area.
- ✓ Provide acoustic enclosure for rotating equipment, silencer for DG set.
- ✓ Proper maintenance – reduction of noise at source.
- ✓ Vehicle will be periodically serviced and maintained
- ✓ Housing of Blowers / Compressors in sound proof buildings
- ✓ Green belt area will be developed to prevent the noise pollution outside the factory premises.

6 Capital cost of the project, estimated time of completion

- The Total Proposed project cost has been envisaged to be **190.80 Cr.**

Fund Allocation for the proposed project

Sl. No.	Item	Cost (Rs. Cr)
1.	Land & Site Development	0.00
2.	Factory shed & structure	27.32
3.	Civil work	22.71
4.	Plant & machinery	89.25
5.	Aux. facilities equipments	6.10
6.	Electrical installation	16.30
8.	Equipment erection	5.58
9.	Misc assets	0.73
10.	Pre Operative Expenses	14.20
11.	Contingency /Escalation	8.60
Total		190.80

The means of finance for the proposed project is as follows:

Means of Finance

Particulars	Rs Cr.
Term Loan	100.00
Equity/ Unsecured Loan	90.80
Total	190.80
Debt -Equity Ratio	1.10

- Time of completion:**

The tentative project schedule is given below:

- 05.10.2021 → Submission of Form-1/PFR
- 23.11.2021 → TOR issued from SEIAA
- March, 2022 → Draft EIA submission for Public Hearing
- May, 2022 → Public Hearing
- July, 2022 → Submission of Final EIA to MOEF&CC for EC

➤ September, 2022 → Consideration of Project by EAC (Industry)

7 Site selected for the project

01.	The proposed project site is located as Latitude of 23°29'41"N and Longitude of 87° 22'30"E .
02.	G.T.Road is at a distance of approx. 0.18 km away from the project site.
03.	Banskopa, PO-Bamunara. Durgapur, Dist. Paschim Bardhaman, West Bengal, PIN 713212, JL No.65, Khatian No.3743, 3825, J.L.No.58, Khatian No.2374, 2885, 3085, 2884
04.	Expansion will be within existing land area. Total area 21.7 acres (88098.62 sqm).
05.	Bidhannagar locality of Durgapur is located at 4.0 km (Approx.) distance from the proposed site and Kolkata is located at 150 km (Approx.) distance from the proposed site.
06.	The nearest railway station Durgapur is about 6.0 km from the proposed project site.
07.	Durgapur Protected forest area is around 2 Kms North of the project Site; No Reserve forest is involved in the project site.
08.	Damodar river is 6.0 Km (Approx.) from the proposed site.

Within 10 km other industries:

Sl. No.	Name of The Industries	Type of industries
Bamunara Industrial Area		
1	Joy Venketes Concast Pvt. Ltd.	Induction Furnace
2	Braha Alloys Pvt. Ltd.	Induction Furnace
3	Ma Vashnavi Ispat Pvt. Ltd.	Induction Furnace
4	Bhaagaawanjee Ispat Pvt. Ltd.	Induction Furnace
5	V.S.P. Udyag Pvt.Ltd.	Ingot
6	Venky Hi – Tech Ispat	Induction Furnace
7	Jawala Coke Plant	Coke Plant
8	Navaraj Ispat Pvt. Ltd.	Ingot
9	Baahunbali Ferro Tech Power Pvt. Ltd	Iron & Steel

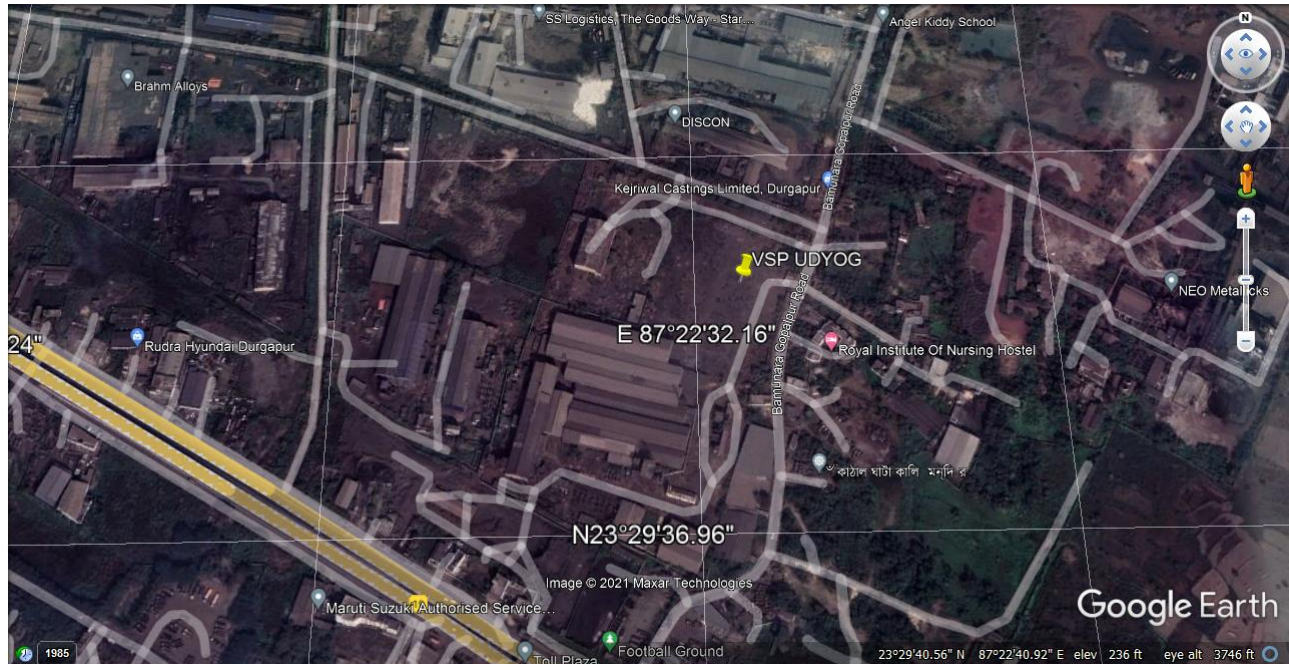
Sl. No.	Name of The Industries	Type of industries
10	Neo Metalik Ltd.	Metaliks
11	Durgapur Iron & Steel Pvt.Ltd.	Induction Furnace
12	R.S. Metal Pvt.Ltd	Metal
13	Waresh Pree Iron & Steel Pvt .Ltd.	Ingot
14	Maa Chandi Durga Cement Pvt.Ltd.	Cement
15	Krishna Sundharam Iron & Steel Pvt. Ltd	Induction Furnace & Rolling
16	Sabitri Ispat Pvt. Ltd.	Iron & Steel
17	Daudu Steel Pvt. Ltd.	Induction Furnace
Banskopa Industrial Area		
18	Ulltra- Tech Cement	Cement
19	Ram Rupai Balaji	Power
20	Jai Balaji	Rolling ,Ferro, Sponge
21	The Supreme Industries Ltd	Plastic
22	Ram Rupai Balaji	Sponge
Leading Company of Durgapur		
23	DSP	Steel & Power
24	TPS	Power
25	DPL	Power
26	DCL	Chemical
27	Durgapur Cement Ltd.	Cement
28	ASP	Steel
29	Alstom India (P) Ltd.	Engineering
30	PCBL	Power& Carbon Product
31	Graphite India Ltd.	Graphite

8 Baseline environmental data

The study area comprises an area of about 10 km around the proposed project site at Banskopa, PO-Bamunara, Durgapur, Dist. Paschim Bardhaman, West Bengal, PIN 713212, JL No.65, Khatian No.3743, 3825, J.L.No.58, Khatian No.2374, 2885, 3085, 2884. Geographical position

is 23°29'41"N latitude and longitude 87°22'30"E in the District of Paschim Bardhaman, West Bengal.

Map of Project Site



Climate

Usually a mixed climate is seen in Durgapur area throughout the year. Average temperature during summer season is 32°C whereas at the cold season, temperature is generally 20°C. Maximum temperature during summer may rise up to 45 °C while minimum temperature during winter comes down to 6°C. Average rainfall is 1200 millimetres with the bulk of rainfall occurring around the July-September period. March to May is dry summer intervened by tropical cyclonic storms. June to September is wet summer while October is autumn. Winter season starts from about the middle of November and continues till the end of February.

Weather summary during study period

1	Predominant Wind direction	:	FROM NORTH EAST
2	Average Wind Speed	:	1.6 m/s
3	Minimum Temperature	:	15.0 °C
4	Maximum Temperature	:	34.5 °C
5	Mean Temperature	:	25.0 °C

6	Minimum Humidity	:	38%
7	Maximum Humidity	:	96%
8	Mean Humidity	:	66.0%
9	Total Rainfall	:	50.0 mm

Land use

Land Use Details

S.No	DESCR_1	DESCR_2	AREA (Sqkm)	Percentage
1	Builtup	Urban	73.72	23.26
2	Agriculture	Crop land	136.82	43.16
3	Forest	Deciduous	42.36	13.36
4	Wetland / Waterbodies	River / Stream / Canals	20.44	6.45
5	Grass / Grazing land	Grass / Grazing land	2.40	0.76
6	Barren / Unculturable wastelands	Sandy area	0.74	0.23
7	Forest	Forest Plantation	1.18	0.37
8	Barren / Unculturable wastelands	Scrub land	5.82	1.84
9	Builtup	Rural	27.93	8.81
10	Builtup	Mining	2.24	0.71
11	Wetland / Waterbodies	Waterbodies	2.14	0.68
12	Agriculture	Plantation	0.12	0.04
13	Wetland / Waterbodies	Inland wetland	0.78	0.25
14	Forest	Scrub Forest	0.49	0.15
Total area			317	100

Ambient Air Quality

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM₁₀ for all the 08 AAQM stations were found to be 80.1 µg/m³ and 158.3 µg/m³ at A7 and A1 respectively, while for PM_{2.5} it was of 38.2 µg/m³ and 69.9 µg/m³ at A3 and A1 respectively. As far as the gaseous pollutants SO₂ and NO₂ are concerned, the prescribed CPCB limit of 80 µg/m³ for residential, rural and industrial areas has never surpassed at any station. The minimum and maximum concentrations of SO₂ were found to be 5.0 µg/m³ to 19.20 µg/m³ respectively. The

minimum and maximum concentrations of NO₂ were found to be 18.50 µg/m³ to 45.9 µg/m³ respectively. The Maximum and P98 levels for PM₁₀ and PM_{2.5} have remained below the ambient air quality standard.

Ambient Air Quality

Stations		PM10 (µg/m ³)	PM2.5 (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	CO (mg/m ³)
Project Site	Mean	137.56	58.71	15.59	36.07	1.14

Ground water Quality

Ground Water sampling Locations are:

- GW1 : Tubewell water near Rabindra Pathagar, Bamunara
- GW2: Well water near Gopalpur
- GW3: Supply water, Kantapukur
- GW4: Tubewell water near Banskopa
- GW5 : Tubewell Water Jawala Coke, Bamunara
- GW6: Tubewell Water Babanbera village
- GW7: Tubewell Water Rajbandh
- GW8: Tap Water Bamunara Industrial residence

Ground water quality for chemical parameters of eight locations around the proposed factory site has been measured as per APHA (23rd Edition), 2017. Ground water analysis report is given in Annexure 6.0.

Surface water Quality

Surface Water sampling Locations are:

- SW1 : DVC canal outlet from Damodar River
- SW2: Damodar river – 60 mt upstream of DVC canal outlet
- SW3: Damodar river – 60 mt downstream of DVC canal outlet
- SW4: Drain – Bamunara Industrial area
- SW5: Confluence of DVC Rajbandh choti canal and DVC Canal
- SW6: DVC Canal 60 mt upstream of DVC Rajbandh choti confluence

- SW7: DVC Canal 60 mt downstream of DVC Rajbandh choti confluence
SW8: Pond near Bhairabpur

Sampling and analysis of eight numbers of surface water samples was done to assess the surface water quality for this study. The method for sampling & analysis was followed as per APHA (23rd Edition), 2017. The results are furnished in Annexure 7.

Noise Level Survey

Noise levels were measured in different category of area surrounding the proposed project site. Some sensitive areas were also covered to assess the existing noise level in day & night. The noise report prepared by Envirocheck laboratory is depicted at Annexure 5.0 of EIA.

Outside Ambient noise level during day time is expected to be within 55 dBA and during night time to be 45 dBA (EPA (GSR 1063(E), 1989). The noise results show that due to traffic and other noise sources, it cannot be maintained at a number of places.

Soil Quality

In order to assess the quality of soil in the study area, three numbers of soil samples were collected during the field survey. The results of soil analysis are presented in Annexure 8.0 of EIA.

The analysis results show that soil is basic in nature as pH value ranges from 7.10 to 7.25. The concentration of Nitrogen, Phosphorus and Potassium has been found to be in good amount in the soil samples. Soil texture is Loamy Sand at project site. Soil for agricultural land is fertile and suitable for crop production.

Ecology study (Flora and Fauna)

Flora

The most common natural tree species found within the study area are Sal (*Shorea robusta*), Radhachura (*Peltophorum pterocarpum*), Eucalyptus (*Eucalyptus globules*), Mahua (*Madhuca indica*), Devdaru (*Polyalthia longifolia*), Segun (*Tectona grandis*), etc.

There are also several natural species of shrubs, herbs and climbers observed within the study area.

Ecological study along with list of plant is given in Annexure –11.

A full checklist of vascular plant species as recorded during the field survey has been made. The growth form of the plant species as categorized are big trees, medium trees, small trees, thorny trees, tall palm, herbs, small herbs, aquatic herbs, shrubs, small shrubs, under shrubs, climbing shrubs, lianas and climbers.

Rare and Endangered Plant Species

The International Union for Conservation of Nature and Natural Resources (IUCN) designated the term "rare" and 'endangered' plant species in the "Red Data Book". As per IUCN's "Red Data Book", none of the taxa are found in this region could be marked as rare or endangered plant species.

Medicinal Plant Species

It was observed during the field survey of the study area, that the medicinal plant species occurred in a sporadic manner and only a few number of medicinal plant species could be identified and the list of the medicinal species are presented in Annexure –11.

Agricultural Crops

The study area is under the sub region of fairly hot and moist climate with sandy loam and medium water holding capacity. The annual rainfall is 1400 mm and length of growing periods for crops is 150 – 180 days. Rice is the most important crop. Wheat, Oil seeds, pulses are the main commercial crop. Other main crops are sugarcane, potato, chillies, ginger etc.

Fruit trees are – Mango, Jackfruit, Tamarind, Banana, Kul, Bel, Nona, Ata etc. The garden vegetable are Alliums, Bet, Cucurbita, Tomato, beans, pea, potato etc.

Plan of Genetic and Economic Importance:

A large number of plant species of the study area have economic utility like timber, medicine, food, fuel wood. Such plant species may be used for afforestation programme under "social forestry". It was also observed during the sample survey that none of the species could be considered as unique to this place, whose germplasm needs to be conserved in the region under ex-situ condition.

Faunistic Status of the Study area

A faunistic checklist of the study is presented in Annexure –12.

Few wild animals like Fox, Jackal, monkey, Wild cat etc. could be seen in the study area occasionally.

The faunistic species as reported by the local people are mostly of V categories. A few species come under Schedule II category of Indian Wild Life Act are sometimes observed. The core area is free from any faunistic species.

Aquatic Status of the Study area

List of aquatic, semi aquatic, macrophytes along with list of fishes in Damodar river near project site are given in Annexure –12.

Socio-economic condition

According to the Census of 2011 Bardhaman District had a population of 7,717,563. Paschim Bardhaman District was formed on 7 April 2017 as 23rd district of West Bengal. It has its

headquarters in Asansol. Total area of this District is 1603.17 km². Total population is 2882031 population, sex ratio is 922. Literacy rate is 73.86 per cent.

The concerned CD Block Kanksa had a population of 1,78,125 in 2011 of which 91,350 were males and 86,775 were females; hence the sex ratio was 918. SC and ST population were 34.99% and 10.24% respectively. Population density in 2011 was 640 per sq km.

List of Habitations in the Impact Zone is attached as Annexure 10.

The findings of desk review, socioeconomic survey and various consultations at community level are presented below:

The Impact Zone is characterized by several industries, educational institutions and medical centres. Major sources of livelihood in the Impact Zone are agriculture; work in factories as labourers, petty business and services. Of the participants more than 26% are farmer, 15% are worker, 42% are housemakers, 9% each are students and in business, more than 8% are unemployed and the rest in various employments. Child labour in any industry was no reported. But in one location the residents informed that the young workers work in the agriculture field as labourers. Land in the villages is mainly used for agriculture purpose and for residential use. Almost all have a cell phone for communication, many own two-wheelers.

Almost all locations have primary school, high schools; for secondary and higher secondary schooling students travel to other adjacent towns/cities. College education and various degree/diploma courses are accessed at Durgapur, Bardhaman and for university the students mostly travel to Bardhaman or Kolkata. Very few students go for higher education from the Impact Zone. There are technical institutes and English language training schools at Durgapur.

For water supply the residents depend mainly on hand pump, which exists in each village. In each village the concerned panchayat is accountable for providing potable water. In majority (70%) villages people have latrine at home. There is no solid waste management system in the Impact Zone. About 90% have electric supply; all villages enjoy the benefit of Public Distribution System (PDS). Only about 20% each of the surveyed locations are having the facility of community centre and library. Of all 50% of the villages have some playground available with them. Main mode of communication or daily activities is bus. Other modes are motorbike, toto, etc. Most of the locations have bus stops nearby. Almost every household is using mobile phone.

All the locations have access to some banks, though may not be in the same village. Each location has self help groups created by the women with support of anganwadi workers or under some government scheme. These are thrift and credit societies, but most of those groups are not yet confident to start any business till date. Probably they need more support and hand holding towards such initiative.

For advanced and critical health care, people visit Durgapur Sub Divisional Hospital and also a primary hospital is there. Of all 50% of the respondents communicated that people mainly suffer from allergy, skin disease, breathing problem, asthma, eye problem, etc. due to pollution.

9 Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk

The hazards identified for the proposed project activities are presented below.

Potential Hazard Identification

Group	Item	Nature of Hazard	Hazard Potential	Remarks
Induction Furnace	Hot metal & slag Handling	Heat	Major	Fire hazard
	Molten Metal Explosions	Fire	Major	Flammable, Burn
	Heat Stress	Heat	Moderate	Fire & personal injury
	Mechanical Hazards	Heat	Moderate	personal injury
	Recirculating cooling water coming in contact with the molten iron or slag, Leakage of water from the refractory walls	Heat	Major	Spurting of metal/slag. Explosion under extreme cases.
Rolling Mills	Gas firing	Fire	Major	Fire hazard
Electric Power supply	Short circuit	Fire	Major	Fire hazard
Hydraulic oil and lubricants	Accidental discharge of hydraulic oil under pressure	Fire & Toxic	Moderate	Fire & personal injury

- *Molten Metal Explosions:*

The explosions in an induction furnace can be due to steam entrapment or any other chemical material during heating process.

Steam Explosions: Causes of Steam explosions include:

- a) During pouring of molten metal into refractories containing moisture.
- b) Due to moisture present within the molten metal.

To minimize the risk, following safety measures will be taken.

- ❖ Use Moisture free raw material.
- ❖ Removal of possible sources of moisture that could come into contact with molten metal.
- ❖ Preheating of raw material before feeding into induction furnace.
- ❖ Preheating of refractories before pouring of molten mass.
- ❖ Keep the Equipment and tools free from rust, and preheated before use.

- *Mechanical Hazards:*

Machine and Equipment used may create mechanical hazards. Mechanical handling devices like cranes, hoists, forklifts and conveyors etc. used within Induction Furnaces may generate hazard.

To minimize the risk, following safety and control measures will be taken.

- Care should be taken for:
 - a) Extreme vibration
 - b) Machine lubricant contaminants
 - c) Increase stress on fittings and components
 - d) Excessive heat
 - e) Airborne & machine lubricant contaminants
- To avoid undesirable Problems or accidents in the factory premises, Personal Protective Equipment (PPE) for the workers is necessity.
- Plant should be well maintained and regular inspection is necessary, so that it remains safe to use.
- Following Personal Protective Equipments during factory operations shall be provided:
 - a) Insulation Gloves: During raw materials handling, gloves should be used by the workers.
 - b) Rubber Gumboots: Workers working close to high temperatures should use to protect the skin from burns.
 - c) Goggles: Goggles should be used by the workers who work on feeding the charge in the furnace or furnace related works.

- d) Face Shield Helmet: The person involved for welding work will be provided with face shield helmet.
- e) Medical Facilities: The Factory will provide the medical facilities to handle any emergency.

- Chemical Explosions:

During heating process, chemical explosions take place due to the presence of chemicals/substances in the molten metal which cause pressure buildup in the molten mass.

To minimize the risk, following safety and control measures will be taken.

- Efficient raw material storage systems.
- Labeling the Raw materials.

- *Heat Stress:*

Workers who are exposed to extreme heat or work in hot environments may be at risk of heat stress.

Effects of heat stress:

- ✓ Discomfort, heat cramps or heat rash to heat exhaustion or heat stroke can cause permanent injury or death.
- ✓ It affects concentration, perception and decision making.
- ✓ Heat stress can also affect behavior and judgment.

To minimize the risk, following safety and control measures will be taken.

- Installing spot coolers, blowers, fans or air-conditioning to relieve heat and circulation of air.
- Shielding radiant heat emissions from process plant.
- Using ventilation to draw in cooler air.
- Provide respite areas for workers.
- *Burns:* Burns are major source of injury in molten metal processes and are usually caused by touching hot surfaces, radiation or splashing of molten metal.

Following safety and control measures will be taken to minimize the risk.

- Manual handling of casting will be avoided.

- To minimize the risks, automating machinery will be used.
- Separating workers not directly involved in casting operation from the casting area.
- Control and Design the processes to prevent unpredicted reactions occurring.
- To prevent exposure to heat, protective barriers should be provided e.g. screens around the pouring station.
- Task-specific PPE should be provided in addition to other control measures.
- Always Safe distance should be maintained.
- *Using high currents:* Exposure to high current may be hazardous to people with heart pacemakers and cause burns.

To minimize the risk, following safety and control measures will be taken.

- Sources of electrical risk in the workplace should be removed.
- Tagging and testing should be done on all plant at least within the last 12 months.
- Effectively rated quick-response circuit breakers should be incorporated, supported by reliable, selective digital/microprocessor-based electro-magnetic protective relays in the electrical system design.
- Safety switches should be installed and test of switches should be done regularly.
- The workers should wear task-specific protective clothing in the industry.
- To identify electrical faults or hazards, thermal imaging or infrared scanning should be used.
- Damaged coils should be replaced before the operation of the furnace.
- Access to high-voltage areas should be restricted.

Some important critical safety measures are provided within the process technology/equipment itself for the safety in production area & continue efforts should be given for developing new technology/equipment.

Safety Measures for Preventive Maintenance:

The safety measures in process & other plant area are as below:

- Keep appropriate and sufficient fire extinguisher in the vicinity of work area.
- Do not work on equipments without permission from plant head and maintenance head.

- Use proper PPE.
- Any employment will not be allowed without pre-medical check-up or without fitness checking.
- Make sure all process lines are disconnected.
- Work with any equipment must be conducted in presence of supervisor.
- Make checklist covering Do's & Don'ts of preventive maintenance,
- EHS are updated timely and made available to all concern department & personnel.

10 Likely impact of the project on air, water, land, flora-fauna and nearby population

Construction phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Transportation of construction material	Air Pollution (Dust & Gases)	Transportation of construction material by trucks and exhaust emission from vehicles	Direct Negative	Short Term	Reversible	Medium, Regular emission checks shall be performed.
	Noise Pollution	Noise generated from loading /unloading and movement of vehicles	Direct Negative	Short Term	Reversible	Insignificant, Regular vehicle maintenance shall be done. PPE shall be provided.
Construction activities	Air Pollution (Dust & Gases)	Operation of construction machinery, welding & others	Direct Negative	Short Term	Reversible	Insignificant. PPE shall be provided to workers
	Noise Pollution	Generation from construction activities	Direct Negative	Short Term	Reversible	Significant. PPE shall be provided to workers

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Land use	Storage of spares, Refractory, Setting up of project	Direct Negative	Short Term	Reversible	Insignificant. Storage is temporary and during construction period only

Operational phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Transportation of the Coal & other raw materials from the Mines/Suppliers to the Site						
Transportation of the Mineral ore and required material.	Air Pollution (Dust & Gases)	Haul road dust emission. Gaseous emissions due to Vehicle exhaust	Direct Negative	Short Term	Reversible	<ul style="list-style-type: none"> • Covered trucks/dumpers shall be used for transportation of the raw materials. • Water sprinkling shall be done on roads and unloading area. • Regular vehicle maintenance and pollution check shall be done. • Besides, the management will ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Noise Pollution	Noise pollution due to unloading of raw material and vehicle movement	Direct Negative	Short Term	Reversible	<ul style="list-style-type: none"> • Low, unloading will be done in covered area from low height. • PPE shall be provided to the workers working in the area.
Handling & Transportation of Raw material	Air Pollution (Dust Emission)	Transportation of Coal to the Site.	Direct	Short Term	Air Pollution (Dust Emission)	Transportation of Coal to the Site.
	Air Pollution (Dust Emission)	The raw material is emptied to the storage yard. So, dust emission during unloading of Raw material.	Direct Negative	Short Term	Reversible	<p>Low, The unloading will be done in covered area. Also, there water sprinkling will be practiced to minimize dust emission.</p> <p>The management will also ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust.</p>
	Land	Spillage of raw material on the land	Direct Negative	Short Term	Reversible	The raw material storage yard will be made of RCC. Hence no contamination of the land is envisaged.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Operation & Maintenance of Crusher	Air,	Crushing of the Iron Ore (Dust Emission & Noise Generation)	Direct Negative	Long Term	Reversible	The crusher will be entirely covered but a proper dust extraction system consisting Cyclone and Bag filter to be provided to ensure that no iron ore dust emission to the atmosphere take place. Moreover preventive maintenance will be done to ensure minimum noise. Besides, the management will also ensure proper usage of the personal protective equipments by the workers. viz. Dust Mask, Ear Plug , Goggle etc.
	Noise Pollution	Crushing	Direct Negative	Short Term	Irreversible	Preventive maintenance and suitable mountings shall be used to ensure minimum noise.
	Land Contamination	Land contamination due to dust	Direct Negative	Short Term	Irreversible	While crushing continuous water sprinkling will be done so as to ensure minimum dust emission. The crusher area will be made of RCC, hence no ground contamination will occur.

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Operation of Induction furnace	Air Pollution	Dust emission from Stack, Fugitive emission	Direct Negative	Long Term	Reversible	Stack will be provided with suitable APC system. So, the impact will be insignificant. If no APC system is installed there will be high impact. If proper water sprinkling system is installed then the impact due to fugitive emission will be insignificant.
DG Set						
Operation of the DG Set	Air Pollution	Flue gas emission and Used oil generation	Direct Negative	Short Term	Reversible	The DG will be operated in case of power failure only. Green DG sets shall be installed (As Per CPCB & TOR Guidelines)
	Noise Pollution	Generation of noise during DG Set operation	Direct Negative	Short Term	Reversible	The DG Sets will have acoustic enclosure to minimize the noise.
Domestic Waste						
Operation and of Domestic utilities	Water Pollution	Operation of Washroom, toilets – Wastewater generation	Direct Negative	Long Term	Reversible	The sewage will be disposed into septic tank and soak pits. No discharge from Soaking Pits.
Greenbelt Development						
Development and maintenance of Greenbelt	Reduction in Air Pollution and Noise Pollution	Plantation of trees within premises to cover 33% of the area	Direct Positive	Long Term	Reversible	Positive Impact due to development of a proper greenbelt along the periphery of the premises. This will act as barrier for air emission and noise

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Socio-economic Development						
Employment Generation			Direct Positive			Positive Impact due to direct employment of persons from the nearby area.
						Substantial benefits in the form of contracts to local agencies for different services.
						Employment generation in transport sector for transportation of raw material and finished goods.

11 Emergency preparedness plan in case of natural or in plant emergencies

The main areas considered for management capability are as follows:

Compliance with existing Rules and Regulations: The following statutory provisions to be complied by PP:

The MSIHC Rules, 1989/2000 notified under the Environment Protection Act, 1986.

Rules on Emergency planning, Preparedness and Response for Chemical Accidents.

Factories Act, 1987 (Amended)

Public Liability Insurance Act, 1991

Air Act, 1981 and Water Act, 1974

Engineering Aspects: This includes the factory layout and following general features of the facility.

1. Demarcation with proper boundary wall
2. Green belt and buffer zone
3. Segregation of process and utility blocks
4. Access for emergency vehicle movement
5. Adequacy of exit and entry points

6. Ventilation of process area
7. Source of process know how and documentation
8. Use of codes and standards
9. Third party inspection

Process Aspects: This include the process safety angle like reaction characterization (is the reaction well characterized in terms of runaway potential, exotherms, heat of reaction, etc.), existence of high temperature pressure alarms, back up indicators, annunciate panel, etc. and existence of process control through PLC, single loop controls, interlocks, etc.

Emergency response: It includes the emergency preparedness of the installation like

1. Working on-site emergency plan
2. Fire protection system in terms of fire water storage, hydrant, sprinkler, foam, fire alarms, smoke detectors and gas detectors
3. Emergency power
4. First aid, emergency vehicle and medical provisions
5. Back-up communication
6. Training and mock drill
7. Personnel Protective Equipment and Self-Contained breathing apparatus

Management System: It includes the management commitment within the organization.

Existence of professionals in key factory positions

Safety, health and environment function

ISO 14000 and ISO 9000 certification, safety and environment policy

System for recording near miss and accident investigation

Workers awareness of hazards involved

Operation and Maintenance System: This includes existence of SOP for all critical operations Inerting systems used for reactors, tanks, pipelines, etc.

Earthing system

Preventive maintenance system

System for implementing plant modifications

- The aim of hazard control and disaster management is concerned with preventing accidents through standard design and efficient operation, preventive maintenance, inspection and proper usage of safety measures by which it is possible to reduce the risk of an accident. PP will coordinate with the District Administration and adopt all measures to minimize the effect of disaster. The objective shall be to localize the emergency and, if possible, eliminate it and minimize the effects of the disaster on workforce and surrounding

community. This EMP formulates a procedure for controlling disaster with minimum damage to men, material and machines, evacuating the victims to safer places, rescuing the victims and providing them medical treatment, rehabilitating the affected areas, delegating specific tasks to staff (avoid overlapping of activities within various groups) and preserving relevant records as evidence in any subsequent inquiry.

1. Elimination of hazards will require prompt action by operators and emergency staff and mobilizing fire-fighting equipment, emergency shut-off valves and water sprays. To minimize the effects of a disaster, prompt operation for providing rescue, first aid, evacuation, rehabilitation and right information to people living in nearby areas is necessary.
2. Emergency team leader is called site main controller (SMC) who shall be the plant manager. He shall lead the emergency response team. In his absence the senior most person available at plant shall act as emergency team leader. Besides the top officials described above, rest of the employees shall be divided into three action teams namely A, B, C. Action team A consists of staff of section in which accident has occurred. Action team B consists of staff of non-affected section and maintenance department. Action team C consists of supporting staff i.e. security supervisor, shift supervisor and ancillary people comprising of contractor, labour.
3. Team A will initiate action in case of an emergency. Team B will help team A by remaining in their respective sections and preparing to comply with specific instructions of SMC. Team C consisting of supporting staff will help Team A as and when required and receive direction from Team B to act. Team C will help in evacuating the affected personal to safer place, under the supervision of Team B. A multi-channel communication network will connect Site Emergency Control Room (SECR) to control rooms of various other departments and the nearest fire station, medical centre and district hospital.
4. The onsite emergency will in all probability commence with fire or burns and the victims shall be the members of operational staff on duty. In case a staff member on duty spots the emergency, he (as per site emergency procedure of which he is adequately briefed) shall go to nearest emergency (fire) alarm location. He shall try his best to inform the exact location and nature of emergency to the firefighting station. In accordance with work emergency procedure, the following key activities shall immediately take place to control the emergency.
5. On site crew shall arrive at the site of incident with fire extinguishers and necessary equipment.
6. Emergency security controller shall commence his role from main gate office.
7. Incident controller shall arrive at SECR with members of his advisory and communication team and assume absolute control of the site. He shall receive information continuously from incident controller and give decisions and directions to the following:

- Incident Controller
 - Plant Control rooms
 - Emergency security officer
 - Site or shift medical officer
8. After all the key emergency personnel have taken up their respective positions, the incident controller shall use communication system to convey and receive the messages. At the site of incident the incident controller shall directly handle the emergency with the help of specific support group such as Team C and firefighting personnel. At the main gate, the Emergency Security Controller and Personnel Manager will contact external agencies. At the site medical center / first aid center, the Medical Officer will take control of medical support services. Site Main Controller shall direct and decide all issues and direct the following aspects:
- Whether the incident controller requires reinforcement of manpower and facilities.
 - Whether the plant operation shall be shut down or kept in running condition.
 - Whether the staff in other locations shall be kept indoors or evacuated and assembled at predefined safe areas.
 - Whether the missing staff members shall be searched or rescued.
 - Whether off-site emergency plan shall be activated and message to that effect shall be sent to the District Headquarter / Administration.
 - Whether and when outside emergency services shall be called.
 - Respond to any large size complaints from outside public and to assess an off-site impact arising out of the on-site emergency.
9. On receiving the message of Disaster from site main controller (SMC), fire control room attendant shall sound siren 'wailing type' for 5 minutes. Incident controller shall arrange to broadcast disaster message through public address system. On receiving the message of 'Emergency Over' from incident controller the fire control room attendant shall sound alarm 'All Clear Signal' straight for two minutes. The features of alarm system shall be explained to one and all to avoid panic or misunderstanding during disaster.
10. On receiving the signal following actions shall be taken:
- All the members of advisory committee, personnel manager, security controller, etc. shall reach the SECR.
 - The process unit persons will remain ready in their respective units for crash shutdown on the instruction from SECR.
 - The persons from other sections will report to their respective officer.

- The concerned section will take immediate action to remove contractor's personnel outside the plant gate.
11. When the incident has eventually been brought under control as declared by the incident controller, the SMC will send two members of his advisory team as incident site for the following purpose:
- To conduct an on-the-spot assessment of total damage and prevalent condition with particular attention to possibility of recurrence of the emergency situation, which may be temporarily under control.
 - To inspect other parts of site which might have been affected by impact of incident.
 - To inspect the personnel collection centers and roll call centers, to check if all persons on duty have been accounted for.
 - To inspect all the control rooms of the plant in order to assess and record the status of respective plants and to supervise any residual action that is deemed necessary.
12. Once the emergency situation comes under control, the advisory team shall return to SECR with their observations, report and submit the findings in writing to SMC. Based on the reports, SMC shall communicate further directives to all emergency management sub-centers and finally declare and communicate termination of emergency and authorize step by step restoration of normal operation of the affected plant. Emergency security controller and personnel manager shall deal with all the members of public and other local bodies from the main gate office. During the entire period of emergency, the site shall remain out of bounds to external visitors except for the following officials:
- District fire personnel
 - District hospital ambulance staff
 - Civil/ Defense personnel
 - District administration
 - Factory Inspectorate Officers and Labour Commissioner
 - Officers of State Pollution Control Board
 - Insurance authorities.
13. Effective working of rescue team is essential during the disaster. In order to make the services of rescue team more effective following equipment shall be provided to the team.

- Chemical cartridge type gas mask (self-contained breathing apparatus)
 - Self rescue type gas filters (with oxygen cylinder or compressed air)
 - Mechanical filters
 - Fire proximity suits, asbestos aprons or aluminized asbestos suits
 - Safety helmets
 - Face shields (Asbestos or PVC)
 - Petromax lamp/Torche
 - Axes/hand saw
14. In view of vulnerability to fire, effective measures have been considered to minimize fire hazard. Fire protection is envisaged through hydrant and sprinkler system, designed as per the standard recommendations.
15. For detection and protection of the plant against fire hazard, any one or a combination of the following systems will protect susceptible areas:
- Hydrant system
 - Medium velocity spray system
 - Portable fire extinguishers
 - Fire alarm system
16. Fire hydrant points shall be provided at all necessary places. Medium velocity spray system shall be provided for protection of transformers, cable galleries and coal storage areas. Water for hydrant, spray and sprinkler systems shall be supplied from the fire-water pumps located in water pump house. The hydrant system shall be designed as an ordinary hazard class. Adequate number of portable and mobile chemical fire extinguishers (Carbon dioxide, dry chemical powder, foam types) shall be provided at strategic locations throughout the plant. Fire detection, heat detection, hydrocarbon detection and alarm system shall be provided to detect fire/ heat/ smoke/ hydrocarbons in vulnerable areas of the plant.

12 Issues raised during public hearing and response given

Public Hearing will be carried out for the expansion project.

13 CSR plan with proposed expenditure

The Industry intends to undertake CER activities in and around their Plant. A total amount of Rs. 1,43,10,000/- (Rs. One crore forty three lakh ten thousand only) would be utilized for CER program over a period of 5 years. The said amount is 0.75% of the total project cost.

5 YEARS CER PLANNING							
	Project Cost	Rs. 190,80,00,000.00					
	Budget for CER (0.75%)	Rs. 1,43,10,000.00					
SL. No.	CER DETAILS	5 YEAR CER PLANNING (RS.)					TOTAL (Rs.)
		1 ST YEAR	2 ND YEAR	3 RD YEAR	4 TH YEAR	5 TH YEAR	
1	Improvement and beautification of road and other infrastructure in vicinity	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000.00
2	Help to Forest Department and local authority for tree plantation in the area	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000.00
3	Donation to locality Schools for construction of Toilets, School Building and drinking water facility, gardening	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000.00
4	Installation of solar street lights in local area	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000.00
5	Health camp (Blood donation, eye checkup, child health etc.)for the local people	5,00,000	5,00,000	5,00,000	5,00,000	5,00,000	25,00,000.00
6	Slum community development	6,00,000	6,00,000	6,00,000	7,55,000	7,55,000	33,10,000.00
7	Contribution to WBPCB for Environmental and Social developmental programs	5,00,000	5,00,000	5,00,000	5,00,000	5,00,000	25,00,000.00
	TOTAL COMMITMENT (0.75% OF TOTAL BUDGET)						1,43,10,000.00

14 Occupational Health Measures

Occupational health and safety monitoring programs shall verify the effectiveness of prevention and control strategies. The selected indicators shall be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The performance and achievements of the OHSMS responsible for all management of all environments, Health & Safety

aspects shall be reassessed on annual basis. The occupational health and safety monitoring program shall include:

Safety inspection, testing and calibration: They shall carryout inspection and testing of all safety features and hazard control measures for plant operation. This shall include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection shall verify that issued personal protective equipment (PPE) continues to provide adequate protection and is being worn as required.

- All instruments installed or used for monitoring and recording of working environment parameters shall be regularly tested and calibrated, and the respective records maintained.
- Surveillance of the working environment shall be carried out.
- Surveillance of workers health: When extraordinary protective measures are required, workers shall be provided appropriate and relevant health surveillance prior to first exposure and at regular intervals thereafter. The company will provide appropriate and relevant health surveillance to workers with special emphasis to the dust prior to first exposure and at regular intervals thereafter.

15 Post project monitoring plan

Description	Number of Monitoring Stations	Frequency
Ambient Air Quality	2 (upwind and downwind direction inside the plant boundary)	Weekly
Parameters – PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂		

Component	Location	Parameter	Monitoring & Analysis Method	Monitoring Frequency
Stack Emissions Monitoring	Port holes made on the stack (6 cm diameter, 2 Nos. at 90° to each other), provided with flange. Location of the port hole at 6 times the stack diameter. Platforms with railings be provided.	PM SO ₂ NO _x CO ₂	SPM & SO ₂ – CPCB Method NO _x – USEPA Method 7 O ₂ – Orsat analysis CO ₂ – Orsat Analysis Duration of sampling – Isokinetic method using stack monitoring kit Sample volume – 500 l of flue gas	Every week

Component	Location	Parameter	Monitoring & Analysis Method	Monitoring Frequency
Groundwater Quality	Inside plant Nearby village	pH TDS TSS Total hardness Fluoride O&G	Standard Methods of APHA	Once during pre-monsoon and once during post monsoon

Noise monitoring shall be carried at near to the high noise generating areas (furnace and disc) once in a month and shall be compared with as per the requirement of Occupational Safety and Health Administration (OSHA) Standards.

Monitoring of Ambient noise levels will be monitored once every quarter during day time (6 AM to 10 PM) and night time (10 PM to 6 AM) at plant boundary (nearest and furthest).

16 Conclusion

It can be concluded that on positive implementation of mitigation measures and environmental management plans, the project activities during the construction and operation phase would have manageable & largely have reversible impacts on the environment. Therefore, there will be negligible impact on the environment and on balance; the project would be favorable to surrounding communities and the region. Thus the project is environmentally sustainable.