

PRE-FEASIBILITY REPORT

By

Hi-Tech Power & Steel Limited

[Expansion of Steel Plant - Sponge Iron (60,000 TPA to 90,000 TPA) along with
2 MW Waste Heat Recovery Boiler (WHRB) based in the existing plant premises]

at

Village: Parsada, Tehsil: Tilda,

District: Raipur, Chhattisgarh

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Chapter –1:EXECUTIVE SUMMARY

1.1 SALIENT FEATURES OF THE PROJECT

Hi-Tech Power & Steel Ltd., is an existing Steel Plant located at located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh. Chhattisgarh Environment Conservation Board (CECB) has granted Consents under Water and Air act repectively vide Boards letter no. 2907/TS/CECB/2003 Raipur dt. 07/08/2003 and 2909/TS/CECB/2003 Raipur Dt.07/08/2003 for 1st 1 x 100 TPD Dri Kiln and then subsequently for 2nd 1 x 100 DRI Kiln along with 10 MW Power Plant (WHRB – 4 MW & FBC 0 6 MW), Ingots / Billets capacity 48,000 TPA and Fly ash brick plant 99,00,000 nos./ year vide Boards letter no. 4781/TS/CECB/2005, Raipur Dt. 07/10/2005. Subsequently, we have obtained Environmental Clearance from CECB vide letter no 1253/SEIAA-CG/EC/Ind/Roll RYP/343 dated 12-12-2013 for installation of Induction Furnace Unit (3 x 10 MT) 90,000 TPA, Electric Arc Furnace (3 x 3 MVA) 12,000 TPA and Rolling Mill (1x500 TPD) 1,50,000 TPA.

Now, as part of expansion, company proposed to expand the existing plant as mentioned below;

S.No.	Units	Existing CFE awarded		Proposed Expansion	Production Capacity after Expansion
		Implemented	To be Implemented		
1.	Sponge Iron Kilns	2 x 100 TPD (60,000 TPA)	---	1 x 100 TPD (30,000 TPA)	2 x 100 TPD & 1 x 100 TPD (90,000 TPA)
2.	Induction Furnaces	2 x 8 MT & 1 x 10 MT	2 x 10 MT	---	2 x 8 MT & 3 x 10 MT (1,38,000 TPA)
3.	Electric Arc Furnaces (EAFs)	---	3 x 3 MVA	---	12,000 TPA
4.	Rolling Mill	1 x 500 TPD (1,50,000 TPA)	---	---	1 x 500 TPD (1,50,000 TPA)
5.	Power Plant – WHRB based	4 MW	---	2 MW	6 MW
6.	Power Plant – FBC based	6 MW	---	--	6 MW

1.2 PROJECT PROPONENT

Hi – Tech Power & Steel Ltd. (HSPL) is a public limited company under companies Act-1956 and registered company in DTIC, Raipur. HSPL is a fully functional, integrated, fast moving and automated company of chhattisgarh region. It is created to facilities and promote steel, steel products and Power for the national and international market. HSPL aims to diversify in now frontiers including information technology, energy efficiency, trade & commerce and achieve excellence through research. We are looking forward for the commitment to environment compliance and employment of the natives of chhattisgarh.

HSPL – Objectives

To manufactures, process, sale, purchase, import, export, forge, fabricate, cast, assemble and deal in concast billet by installation of induction and / or other suitable furnace and to manufacture re-rollable products by installation of Rolling and Re-rolling mill.

In a span of five years of its production the company has established commercial arrangement with the manufactures of raw material for supply of raw material on long term basis. Main focus of the company is to directly cater the demands of end users with full efficiency, quality and customer satisfaction. The company is ideally located and easily accessible through all corners of the nation by rail and road

Chapter – 2: INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION

2.1 BRIEF DESCRIPTION OF THE NATURE OF THE PROJECT

Hi-Tech Power & Steel Ltd., is an existing Steel Plant located at located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh. Company has obtained consents from CECB for the existing plant.

Chhattisgarh Environment Conservation Board (CECB) has granted Consents under Water and Air act respectively vide Boards letter no. 2907/TS/CECB/2003 Raipur dt. 07/08/2003 and 2909/TS/CECB/2003 Raipur Dt.07/08/2003 for 1st 1 x 100 TPD Dri Kiln and then subsequently for 2nd 1 x 100 DRI Kiln along with 10 MW Power Plant (WHRB - 4 MW & FBC - 6 MW), Ingots / Billets capacity 48,000 TPA and Fly ash brick plant 99,00,000 nos./ year vide Boards letter no. 4781/TS/CECB/2005, Raipur Dt. 07/10/2005. Subsequently, we have obtained Environmental Clearance from CECB vide letter no 1253/SEIAA-CG/EC/Ind/Roll RYP/343 dated 12-12-2013 for installation of Induction Furnace Unit (3 x 10 MT) 90,000 TPA, Electric Arc Furnace (3 x 3 MVA) 12,000 TPA and Rolling Mill (1x500 TPD) 1,50,000 TPA.

Now, as part of expansion, company proposed to expand the existing plant by installaing 1 x 100 TPD DRI Kiln along wih 2 MW WHRB based power plant.

Proposed expansion will be carried out in the existing plant premises only.

2.2 NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY AND OR REGION

India's economic growth is contingent upon the growth of the Indian steel industry. Consumption of steel is taken to be an indicator of economic development. While steel continues to have a stronghold in traditional sectors such as construction, housing and ground transportation, special steels are increasingly used in engineering industries such as power generation, petrochemicals and fertilizers. India occupies a central position on the global steel map, with the establishment of new state-of-the-art steel mills, acquisition of global scale capacities by players, continuous modernization and up gradation of older plants, improving energy efficiency and backward integration into global raw material sources. Steel production in India has increased by a compounded annual growth rate (CAGR) of 8 percent over the period 2002-03 to 2006-07. Going forward, growth in India is projected to be higher

than the world average, as the per capita consumption of steel in India, at around 52 kg, is well below the world average (170 kg) and that of developed countries (400 kg). Indian demand is projected to rise to 300 million tonnes by 2025. Given the strong demand scenario, most global steel players are in a massive capacity expansion mode, either through brownfield or Greenfield route. Steel production capacity in India is expected to touch 170 million tonnes by 2020. While Greenfield projects are slated to add 30 million tonnes, brownfield expansions are estimated to add 50 million tonnes to the existing capacity of 90 million tonnes. Steel is manufactured as a globally tradable product with no major trade barriers across national boundaries to be seen currently. There is also no inherent resource related constraints which may significantly affect production of the same or its capacity creation to respond to demand increases in the global market. Even the government policy restrictions have been negligible worldwide and even if there are any the same to respond to specific conditions in the market and have always been temporary. Therefore, the industry in general and at a global level is unlikely to throw up substantive competition issues in any national policy framework. Further, there are no natural monopoly characteristics in steel. Therefore, one may not expect complex competition issues as those witnessed in industries like telecom, electricity, natural gas, oil, etc.

2.3 DEMAND AND SUPPLY GAP

Demand for steel is high and as soon as they are processed they will be supplied to nearby industries.

2.4 EXPORT POSSIBILITY

As the Indian steel industry has entered into a new development stage from 2007-08, riding high on the resurgent economy and rising demand for steel. Rapid rise in production has resulted in India becoming the 4th largest producer of crude steel and the largest producer of sponge iron or DRI in the world. As the demand is more the export possibility of Sponge Iron will also be more. As the demand is more the export possibility will also be more.

2.5 DOMESTIC/EXPORT MARKETS

While the demand for steel will continue to grow in traditional sectors such as infrastructure, construction, housing automotive, steel tubes and pipes, consumer durables, packaging, and ground transportation, specialized steel will be increasingly used in hi-tech engineering industries such as power generation, petrochemicals, fertilizers, etc. The new airports and

railway metro projects will require a large amount of steel. Hence the domestic and export markets for steel sector will rise.

2.6 EMPLOYMENT GENERATION (DIRECT AND INDIRECT) DUE TO THE PROJECT

The estimated manpower requirement for the proposed project is 50 numbers; the total manpower requirement for the entire plant is 50 numbers inclusive of staff and security. They will comprise of 20 % of skilled labors, 40 % of semi- skilled labors and 40 % of unskilled labors.

Chapter – 3 : PROJECT DESCRIPTION

3.1 TYPE OF THE PROJECT

Hi-Tech Power & Steel Ltd., is an existing Steel Plant located at located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh. Company has obtained consents from CECB for the existing plant.

Chhattisgarh Enviroment Conservation Board (CECB) has granted Consents under Water and Air act repectively vide Boards letter no. 2907/TS/CECB/2003 Raipur dt. 07/08/2003 and 2909/TS/CECB/2003 Raipur Dt.07/08/2003 for 1st 1 x 100 TPD Dri Kiln and then subsequently for 2nd 1 x 100 DRI Kiln along with 10 MW Power Plant (WHRB – 4 MW & FBC 0 6 MW), Ingots / Billets capacity 48,000 TPA and Fly ash brick plant 99,00,000 nos./ year vide Boards letter no. 4781/TS/CECB/2005, Raipur Dt. 07/10/2005. Subsequently, we have obtained Environmental Clearance from CECB vide letter no 1253/SEIAA-CG/EC/Ind/Roll RYP/343 dated 12-12-2013 for installation of Induction Furnace Unit (3 x 10 MT) 90,000 TPA, Electric Arc Furnace (3 x 3 MVA) 12,000 TPA and Rolling Mill (1x500 TPD) 1,50,000 TPA.

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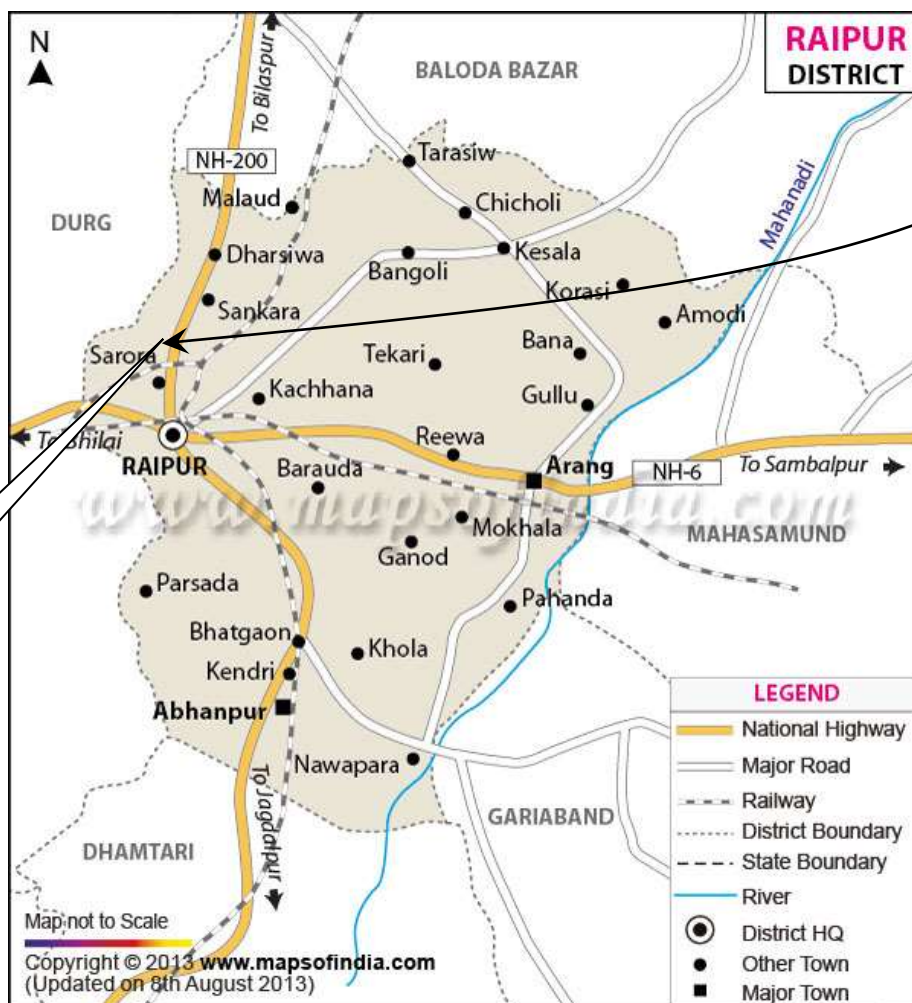
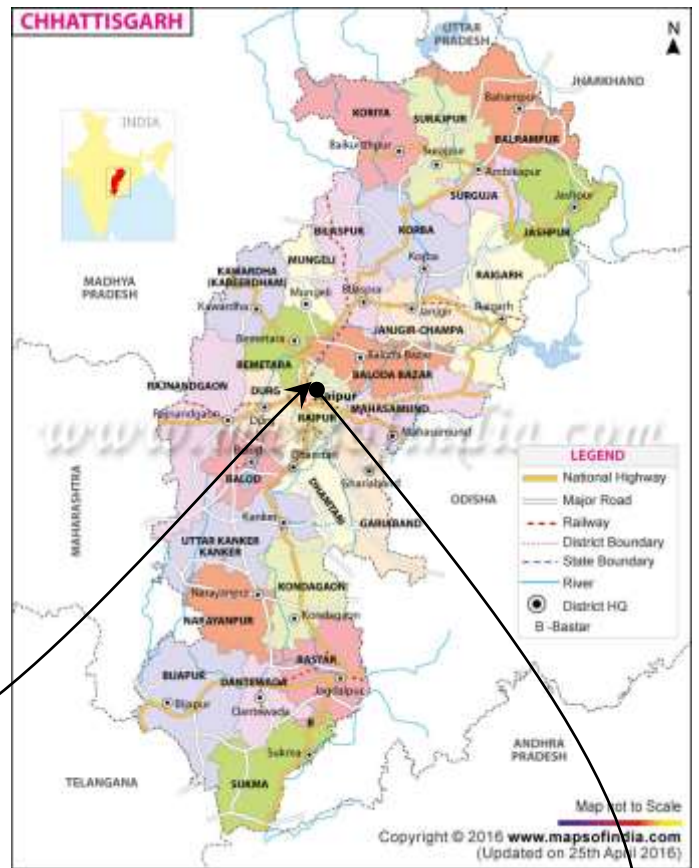
Proposed expansion will be carried out in the existing plant plant premises only.

3.2 LOCATION OF THE PROJECT

- Existing plant is located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh.
- Existing plant is located in the 71.8 acres of land.
- Proposed expansion will be carried out in the existing plant premises only.
- Coordinates of the existing plant are:

Point No.	Coordinates
Point # 1	21°33'31.35"N 81°45'5.61"E
Point # 2	21°33'43.41"N 81°45'13.12"E
Point # 3	21°33'51.52"N 81°45'35.25"E
Point # 4	21°33'33.82"N 81°45'40.36"E
Point # 5	21°33'31.35"N 81°45'24.09"E
Point # 6	21°33'35.53"N 81°45'16.66"E

- The entire project area will fall in the Survey of India topo sheet no. 64 G/14.
- The Index map of the project site is shown in Figure – 1.



3.3 DETAILS OF THE ALTERNATE SITES

No alternative site has been considered, as the proposed expansion will be taken up in the existing plant premises only.

3.4 SIZE OR MAGNITUDE OF OPERATION

S.No.	Units	Existing CFE awarded		Proposed Expansion	Production Capacity after Expansion
		Implemented	To be Implemented		
1.	Sponge Iron Kilns	2 x 100 TPD (60,000 TPA)	---	1 x 100 TPD (30,000 TPA)	2 x 100 TPD & 1 x 100 TPD (90,000 TPA)
2.	Induction Furnaces	2 x 8 MT & 1 x 10 MT	2 x 10 MT	---	2 x 8 MT & 3 x 10 MT (1,38,000 TPA)
3.	Electric Arc Furnaces (EAFs)	---	3 x 3 MVA	---	12,000 TPA
4.	Rolling Mill	1 x 500 TPD (1,50,000 TPA)	---	---	1 x 500 TPD (1,50,000 TPA)
5.	Power Plant – WHRB based	4 MW	---	2 MW	6 MW
6.	Power Plant – FBC based	6 MW	---	--	6 MW

3.5 MANUFACTURING PROCESS

3.5.1 DRI KILN BASED SPONGE IRON PLANT

The Direct Reduced Iron (DRI) plant will comprise of 1 x 100 TPD kiln and related accessories including Waste Heat Recovery power generating unit.

The major plant facilities for the Sponge Iron plant envisaged are as follows:

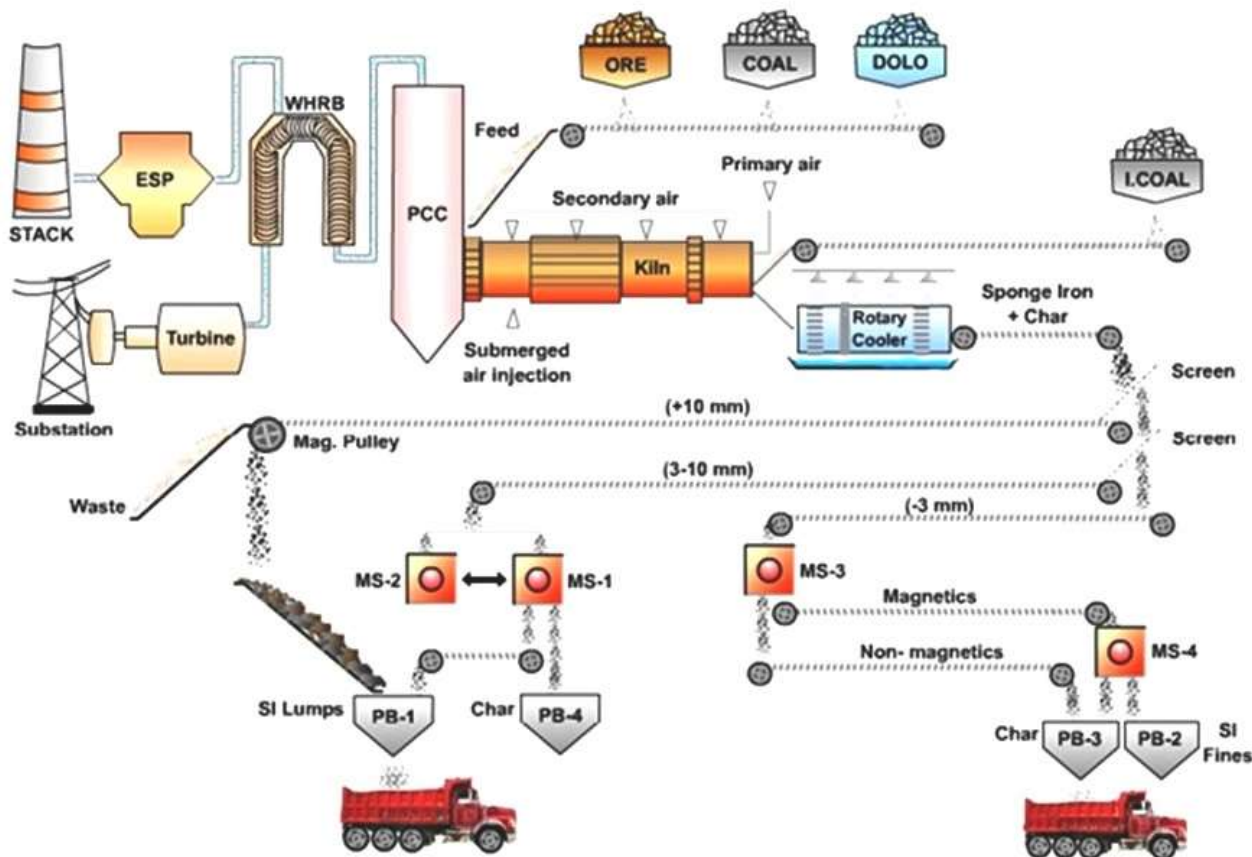
- Day bins
- Rotary Kiln & Cooler
- Central Control Room
- Product processing and product storage
- Off gas system including waste heat recovery power generation

There will be one day bin building for kiln. The day bin building will have bins for meeting raw material required for kiln. This bin will have the storage facility for pellets, feed coal, dolomite etc.

A refractory lined rotary kiln will be used for reduction of Iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln. Sized Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the Sulphur from the coal. A number of air tubes will be provided along the length of the kiln.

The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion rises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000°C enters the reduction zone. Temperature of the order of 1050°C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron. This hot material will be transferred to rotary cooler. In rotary cooler the material will cool from 1000°C to 100°C in cooler by spraying water. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char. Magnetic and non-magnetic material will be separated through magnetic separators and stored in separate bins.

Process flow diagram – Sponge iron



3.5.2 POWER PLANT

WHRB Power Plant

Its is proposed to install 2 MW WHRB based power plant in the proposed expansion project. Production of sponge iron in DRI kiln generates huge quantities of hot flue gases carrying considerable sensible heat. The energy content of these gases can effectively be used to generate electric power as well as steam for meeting various process requirements. Thus a WHRB (Waste Heat Recovery Boiler) power plant would be an ideally suited proposition to effectively make use of this waste gas. This WHRB Power plant would not only make the plant independent of external source of electric power to some extent but would also result in energy conservation and environment protection.

1 Nos. 2 MW Steam Turbo-generators (STGs) envisaged for the Power plant will be single cylinder, multistage, extraction – cum – condensing type complete with condenser, air evacuation system, 2 x 100% condensate extraction pumps, electronic governing system, lubricating oil system, regenerative feed heating system etc. The turbine will be fed with

steam generated from HRSG in DR kiln. The STGs will be located in the machine hall of the power plant.

3.6 RAW MATERIAL REQUIREMENT

The following will be the raw material requirement for the proposed expansion project:

Raw Material		Quantity (TPA)	Sources	Mode of Transport
Iron Ore		48,000	NMDC, Bailadila / Bachheli & Open Market	By rail & road (through covered trucks)
Coal	Indian	39,000	SECL, Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
	Imported	23,125	Indonesia / South Africa / Australia	Through sea route, rail route & by road
Dolomite		1,650	Local area	By road (through covered trucks)
Limestone		2,250	Local area	By road (through covered trucks)

3.7 WATER REQUIREMENT AND ITS SOURCE

Water required for the proposed expansion project will be 100 KLD and same will be sourced from Ground Water source.

3.8 WASTEWATER GENERATION & ITS MANAGEMENT

- There will be no effluent generation in the DRI plant as closed circuit cooling system will be adopted.
- Sanitary waste water will be treated in septic tank followed by sub-surface dispersion trench.

3.9 POWER REQUIREMENT

Power requirement for the existing plant is being met from Chhattisgarh State Electricity Board. Power required for expansion will be met from proposed WHRB based power plant. Surplus power available after meeting the plant required will be exported to the grid.

Chapter – 4 : SITE ANALYSIS

4.1 INFRASTRUCTURE

For establishment and successful operation of plant, it is imperative to ensure availability of the following infrastructure:

- Availability of raw coal & iron ore and its proximity to the plant to reduce cost of transportation.
- Road / Rail head connection so that the raw materials and products can be easily and economically transported.
- Availability of water.
- Permanent and reliable source of power.
- Adequate land for the plant, storage of raw material and products & disposal of waste material.

4.2 CONNECTIVITY

The proposed site is well connected with Road network. The following table gives brief regarding connectivity of the proposed site:

Component	Description
Road	: NH # 130 (5.4 Km) Aerial
Rail	: Nearest station – Tilda Railway Station – 4.75 Kms.
Air	: Raipur Airport – 42.0 Kms.

Below mentioned table gives brief regarding environmental setting of the project site

S.No	Particulars		Distance from the site
1.	Habitation	:	Sarora -1.4 kms.
2.	National Park	=	No National Park is situated within the 15 km radial distance periphery
3.	Wild life sanctuaries	=	Nil
4.	Eco Sensitive Areas	=	Nil
5.	Forests	=	Bilari RF (0.5 Kms.), Bilari Ghughua RF (3.0 Kms.)
6.	Surface water bodies	=	Seonath River (7.2 Kms.) Kharun River (8.5 Kms.) Kulhan Nallah (8.6 Kms.)
7.	Costal Regulation Zone [CRZ]	=	Nil

4.2 LAND DETAILS

- Existing plant is located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh.
- Existing plant is located in the 71.8 acres of land.
- Proposed expansion will be carried out in the existing plant premises only.
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Chapter – 5 : PLANNING BRIEF

5.1 PLANNING CONCEPT

Hi-Tech Power & Steel Ltd., is an existing Steel Plant located at located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh. Chhattisgarh Environment Conservation Board (CECB) has granted Consents under Water and Air act repectively vide Boards letter no. 2907/TS/CECB/2003 Raipur dt. 07/08/2003 and 2909/TS/CECB/2003 Raipur Dt.07/08/2003 for 1st 1 x 100 TPD Dri Kiln and then subsequently for 2nd 1 x 100 DRI Kiln along with 10 MW Power Plant (WHRB – 4 MW & FBC 0 6 MW), Ingots / Billets capacity 48,000 TPA and Fly ash brick plant 99,00,000 nos./ year vide Boards letter no. 4781/TS/CECB/2005, Raipur Dt. 07/10/2005. Subsequently, we have obtained Environmental Clearance from CECB vide letter no 1253/SEIAA-CG/EC/Ind/Roll RYP/343 dated 12-12-2013 for installation of Induction Furnace Unit (3 x 10 MT) 90,000 TPA, Electric Arc Furnace (3 x 3 MVA) 12,000 TPA and Rolling Mill (1x500 TPD) 1,50,000 TPA.

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4.	Rolling Mill	1 x 500 TPD (1,50,000 TPA)	---	---	1 x 500 TPD (1,50,000 TPA)
5.	Power Plant – WHRB based	4 MW	---	2 MW	6 MW
6.	Power Plant – FBC based	6 MW	---	--	6 MW

5.2 POPULATION PROJECTION

Tilda Neora is a small town and a municipality in the outskirts of Raipur City in the Indian state of Chhattisgarh. As of 2001 India census, Tilda-Neora had a population of 26,637. Males constitute 51% of the population and females 49%. Tilda-Neora has an average literacy rate of 63%, higher than the national average of 59.5%: male literacy is 72%, and female literacy is 53%. In Tilda-Neora, 16% of the population is under 6 years of age. Tilda-Neora also famous as a wholesaler of cloth and kirana, and for several rice mills. Tons of rice is exported from here to Africa and other countries. Tilda-Neora is surrounded with more than four cement factories.

There are no major human settlements in the close vicinity of the project site. The manpower requirement will be sourced from the local areas to the extent possible; hence not much of settlement of outside people is anticipated in the area. However population concentration may increase around the project site due to increase in ancillary activities.

5.3 LAND USE PLANNING

- Existing plant is located at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh.
- Existing plant is located in the 71.8 acres of land.
- Proposed expansion will be carried out in the existing plant premises only.
- Present use of land is Industrial.

5.4 AMENITIES / FACILITIES

Facilities like canteen, rest room has already been provided in the existing plant as basic facilities to workers. No other additional facilities are proposed.

Chapter – 6 : PROPOSED INFRASTRUCTURE

6.1 INDUSTRIAL AREA (PROCESSING AREA)

The main plant area comprises of DRI Kilns, raw material storage and product storage etc.

6.2 RESIDENTIAL AREA (NON PROCESSING AREA)

No colonization is proposed; however, facilities like canteen, rest room and indoor games facilities will be provided in the proposed plant and one Admin building is also proposed.

6.3 GREEN BELT

More than 1/3rd of total land availability is reserved for plantation i.e. greenery.

Greenbelt development plan

- Local DFO will be consulted in developing the green belt.
- Greenbelt of 33% of the area will be developed in the plant premises as per CPCB guidelines.
- 10 m wide greenbelt is being maintained all around the plant.
- The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted. A three tier plantation is proposed comprising of an outer most belt of taller trees which will act as barrier, middle core acting as air cleaner and the innermost core which may be termed as absorptive layer consisting of trees which are known to be particularly tolerant to pollutants.

6.4 SOCIAL INFRASTRUCTURE

Social infrastructure will be developed as per need based in the Villages of the close vicinity of the project.

6.5 CONNECTIVITY

The proposed site is well connected with Road network. The following table gives brief regarding connectivity of the proposed site:

Component	Description
Road	: NH # 130 (5.4 Km) Aerial
Rail	: Nearest station – Tilda Railway Station – 4.75 Kms.
Air	: Raipur Airport – 42.0 Kms.

6.6 DRINKING WATER MANAGEMENT

It is estimated that 10 KLD of water will be required for domestic purpose during operation of proposed expansion project.

The desired amount of water will be Sourced from Ground water sources.

6.7 WASTEWATER GENERATION & ITS MANAGEMENT

- There will be no effluent generation in the DRI plant as closed circuit cooling system will be adopted.
- Sanitary waste water will be treated in septic tank followed by sub-surface dispersion trench.

Chapter – 7: REHABILITATION & RESETTLEMENT (R & R) PLAN

No rehabilitation and resettlement is required as Steel plant is already in operation at Village: Parsada, Post: Sarora, Tehsil: Tilda, District: Raipur, Chhattisgarh.

Existing plant is located in the 71.8 acres of land.

Proposed expansion will be carried out in the existing plant premises only.

Chapter – 8 : PROJECT SCHEDULE & COST ESTIMATES

8.1 PROJECT SCHEDULE

Proposed expansion will be implemented in 48 months from the date of receipt of Environmental Clearance from the MoEF&CC, New Delhi & Consent from CECB

8.2 PROJECT COST

The estimated cost for the proposed expansion project will be Rs. 18 Crores.

Chapter – 9 : ANALYSIS OF PROPOSAL

9.1 FINANCIAL AND SOCIAL BENEFITS

With the implementation of the proposed expansion project, the socio-economic status of the local people will improve substantially. The land rates in the area will improve in the nearby areas due to the proposed expansion activity. This will help in upliftment of the social status of the people in the area. Educational institutions will also come-up and will lead to improvement of educational status of the people in the area. Primary health centre will also be developed by us and the medical facilities will certainly improve due to the proposed expansion project.

9.2 SOCIO-ECONOMIC DEVELOPMENTAL ACTIVITIES

The management is committed to uplift the standards of living of the villagers by undertaking following activities / responsibilities as the part of Corporate Social Responsibility.

- Health & hygiene
- Drinking water
- Education for poor
- Village roads
- Lighting