

5.0 ALTERNATIVE ANALYSIS

5.1 Preamble

In this chapter, alternatives considered for the proposed expansion are evaluated and discussed with particular emphasis on environmental considerations.

The project alternatives discussed here include the rational for the proposed expansion siting, raw materials availability and production technology, etc. However, adequate analysis of all the potential alternatives applicable to the production technology cannot be conducted at present as at the time of preparation of this report, assessment of various scenarios of project development are still in progress.

Prior to arriving at a decision regarding establishment of proposed expansion within premises of existing plant, a number of alternatives were examined and reviewed. The options considered were:

- No expansion;
- Establishment of proposed expansion at new site; and
- Establishment of expansion at the same site.

5.2 No Expansion

No Expansion option also implies that no additional production of steel, intermediate products and/or value added products like Alloy Steel Billets, Rebar, SBQ Bars, Wire Rods etc., will take place. In the absence of intermediate products like Sinter, Coke and Captive Power Generation using Blast Furnace Gas and Waste Heat from Coke Plant, the cost of hot metal from the Blast Furnace can not be reduced. Thus there will not be any cost reduction in making of Pig Iron and Steel Billets. Failure to implement the proposed expansion would involve the following:

- Likely closer of existing plant, as the plant in present configuration is not economically viable;
- The company is operating under a CDR package as per orders of Hon. High Court of Andhra Pradesh and has huge debts on its books which may not be serviceable without any expansion plan;
- The Public Sector Financial Institutions have a very large exposure in the company in form of debts and accumulated interests, which the company may not be able to repay if the existing configuration of the plant is maintained;

- Interruption in supply of products and intermediate products;
- Result higher cost of steel;
- Pressure on foreign currency reserves;
- Employment opportunity for the locals or otherwise may cease;
- Lay-OFF of existing employees may become inevitable;
- Development work in and around the plant will stop;
- Activity under corporate social responsibilities (CSR) may not take place; and
- Loss of opportunity to increase both direct and indirect revenue at local, state and national levels.

A development activity in an area inevitably involves its alteration from the environmental point of view. However, to manage this alteration, a cost benefit analysis of the project must also consider all the socio-economic elements in question in addition to ensuring the maximum protection of environment by use of latest, state-of-the-art technologies.

Therefore, choosing the “No expansion” option will mean a loss of preliminary investments on the project and there would be no benefit to the nation. No new employment opportunities would be created. Nonetheless, there will be no alteration of the environment apart from nature induced changes that would invariably have no impact.

5.3 Establishment of Proposed Expansion at New Site

This option implies for:

- Establishment of new infrastructural facilities and utilities along with main Equipment/ machinery;
- Requirement of additional land for infrastructural facilities at new site;
- Requirement of more additional manpower; and
- More project cost.

Therefore, choosing the “Establishment of Proposed Expansion at New Site” will mean wastage of preliminary investments on the project and time consuming.

5.4 Establishment of The Proposed Expansion at Same Site

In this section, alternatives considered for the basic design of the proposed expansion are evaluated and discussed with particular emphasis on location, materials of use, process technology, operation and environment planning. No alternative site is taken into

consideration since this site was conceived from the proposal stage due to availability of iron ore and other raw materials at the proximity and also:

- Existing plant site has additional land required for expansion;
- Existing Infrastructural facilities, utilities and manpower available in existing plant will be extended to proposed expansion; and
- Approachability via rail and road is excellent.

5.4.1 Location

The proposed expansion is to be set up within the premises of existing plant located near Tadpatri in Anantpur district of Andhra Pradesh. The location is advantageous as per details summarized hereunder:

- Iron ore suitable for manufacturing of steel is available at in Bellary & Hospet district in Karnataka and Kurnool & Kaddapa district of Andhra Pradesh;
- Other raw materials are either available locally or from nearby areas;
- The nearest port at Krishnapatnam at 300 km and Chennai is about 350 km;
- The nearest highway SH30, connecting Tadpatri to Cuddapah district is passing adjacent to the plant boundary in north direction;
- The Mumbai Chennai South Central Railway mainline is passing adjacent to plant boundary in the south direction. The nearest railway station is at Challavaripalli Railway Station which is 0.5 km from the plant site; and
- Due to well connectivity with major railway linkages and road will lead to lower freight cost of raw material and finished products.

5.4.2 Raw Material

It is evident from the table given below and section 5.4.1 that most of the raw materials are available in adjoining areas for sufficient duration.

Sn	Raw Materials	Source
1	Iron Ore Lump	Bellary, Hospet, Kurnool & Kaddapa
2	Iron Ore Fines	Bellary, Hospet, Kurnool & Kaddapa
3	Non-Coking Coal for CDI	Imported
4	Lime Stone (BF Grade)	Gooty & Tadipatri
5	Dolomite (BF Grade)	Tadpatri
6	Limestone (SMS Grade)	Rajasthan, MP
7	Dolomite (SMS Grade)	Tadpatri
8	Quartzite	Kurnool
9	Coal	Imported/domestic
10	Purchased Coke	Imported/domestic
11	Purchased DRI	Local

Sn	Raw Materials	Source
12	Purchased Scrap	Local
13	Fe-Cr (HC)	Local
14	Fe-Mo	Local
15	Nickel Plates	Local
16	Fe-Si	Local
17	Fe-Mn (HC)	Local

5.4.3 Process Technology

The feasibility report for the proposed expansion has been prepared taking into consideration the most modern state of art equipment/machinery which would have minimum emission levels and waste generation.

The process technology selected for expansion is in line as being used in existing plant. All envisaged equipments/machinery are commonly used for this application as they have minimum negative impact on the environment.

KGSL is committed to use well known and established, dry process for manufacturing of different products and intermediate products. Adequate analysis of all the potential alternatives applicable to the production technology cannot be conducted at present as assessment of various scenarios of project development is still in progress. However, following options were evaluated and selected based on the quality and cost of the products:

Sn	Process Steps	Possible Options	Selected Option
1	Shaping and finishing for long products	1. Rebar mill 2. SBQ mill	1. Rebar mill 2. SBQ mill
2	Continuous casting	1. Billet Caster 2. Bloom caster	1. Bloom caster
3	Steel making	1. Electric Arc Furnace 2. Energy optimizing Furnace 3. Basic Oxygen Furnace	1. Basic Oxygen Furnace
4	Secondary refining	1. Ladle Furnace 2. Vacuum Degasser	1. Ladle Furnace 2. Vacuum Degasser
5	Iron making	1. COREX process 2. Gas based process for production of DRI 3. Coal based process for production of DRI 4. Blast furnace process	1. Blast furnace process
6	Coke oven	1. Non recovery type 2. Recovery type	1. Non recovery type

5.4.4 Operational

All Standard Procedures of Operation (SOPs) and EHS standards/guidelines (prescribed by APPCB/CPCB/MOEF) are being/shall be implemented/followed during operation of existing and expanded plant.

KGSL has planned to add value to their end product by way of their association with Kalyani and Gerdau Groups which have got rich experience of more than three decades in manufacture of forging steels and other special alloys steel. Kalyani is one of the leading Industrial house and leading manufactures of special carbon and alloy steel in India and **Gerdau Group** of Brazil which is the 13th amongst the largest steel producer @ 26 MT/annum.

5.4.5 Environmental Aspects

KGSL is committed to use best technology available for controlling, treating and disposing of all type of waste to be generated during the operation of proposed expanded plant. The details of air emission, waste water and solid wastes proposed to be generated and their disposal during operation phase are given in *Chapter 2.0*. Environment sensitivities present in the study area of 10 km around the project site are given in *Chapter 3.0*. The anticipated adverse impacts are less due to the following:

- All recommendation including CREP by CPCB/APPCB/MOEF will be complied;
- Less polluting non recovery type coke oven plant is envisaged;
- Heat will be recovered from unused gases from BF and coke oven for power generation;
- Waste water to be generated will be treated and used within the plant premises. No waste water will be discharged outside the premises;
- Solid waste to be generated will be disposed off as per best standard practices in steel industry;
- Air emission will be controlled by providing adequate pollution control equipments; and
- Continuous efforts for improvement of the socio-economic status of the surrounding area.

5.5 Conclusion

Based on the above discussion, it is evident that proposed site is best suited site for expansion and will contribute to social and economic development of the study area and the country in general.

