2.0 PROJECT DETAILS

2.1 Preamble

KGSL proposes to expand their existing production capacity of 0.3 MTPA of Steel Billets to 1.0 MTPA of Rebars and Special Quality Bar. The proposed expansion is planned within the premises of existing plant and no additional land requirement is envisaged. The existing project site is suitable for the proposed expansion for the following reasons:

- Proposed expansion is in the continuation of existing operations;
- Land required for the expansion is available within existing plant premises;
- Other additional infrastructural facilities to be required will be minimum;
- Availability of raw material is assured; and
- Good connectivity of the plant site via road and railway.

2.1.1 Need of the Project

The steel demand in India as forecasted by the Ministry of Steel is estimated to rise up to 110 million tonnes per annum by the year 2012 and is estimated to grow beyond 250 million tonnes per annum by the year 2025 to keep the economy growing and vibrant. This means that the production has to be 5 times of the present production levels. Also, per capita consumption in India at present is nearly 50 kg of steel against the world average of 400 kg hence there is lot of scope for Steel Industry in India.

The cost of importing any type of steel is always higher than the domestic production cost especially in the context of a country like India which has abundant mineral resources for steel making. The estimated production cost of the steel from the proposed project would be in the range of USD 400 per MT for finished steel while cost of imported steel is USD 470 – 500 per MT.

2.2 Products & Raw Material

2.2.1 Products

The details of designed capacity of production of the existing and proposed expanded plant are as per given in **Table 2.1**.

Table 2.1: Designed Production Capacity of the Project

S.No.	Particulars	Designed Production Capacity	
		Pre – expansion	Post Expansion
Finished Products			
1	Rebar Steel	-	0.52 MTPA
2	SBQ Steel	-	0.4 MTPA
3	Cold Pig Iron	-	0.078 MTPA
Intermediate Product			
1	Pig Iron	0.3 MTPA	1.0 MTPA
2	Steel Billets	0.3 MTPA	0.922 MTPA
Sinter plant			
1	Sinter	-	1.47 MTPA
Coke Oven			
1	Coke	-	0.6 MTPA
Power			
1	Coke oven waste heat gas based	-	2 x 25 MW
2	Blast Furnace Gas based	-	1 x 9 MW
3	DG sets (Stand by)	2 x 1250 KVA 2 x 250 KVA	2 x 1250 KVA 2 x 250 KVA

2.2.2 Raw Material

The details of raw materials requirement for the existing and proposed expanded plant and their respective sources are as per given in **Table 2.2**.

Table 2.2: Raw Material Requirement, Its Source and Characteristics

Raw Materials	Size (in mm)	Quantity (TPA)		Source	Composition
		Pre Expansion	Post Expansion		
Iron Ore Lump	10-30	595200	360,300	Bellary, Hospet, Kurnool & Kaddapa	Fe 65.0-65.4%, SiO_2 2.5-3.0 %, Al_2O_3 2.0-2.5 %
Iron Ore Fines	5-20	-	1,198,300	Bellary, Hospet, Kurnool & Kaddapa	Fe 63.0-65.0 %, SiO_2 2.5-3.0%, Al_2O_3 2.0-2.5 %
Non-Coking Coal for CDI	< 50	-	95,400	Imported	Ash % 9-12, VM% 20-30, CV-7000 kcal/kg
Lime Stone (BF Grade)	< 50	42300	81,500	Gooty & Tadipatri	CaO % 47.0-49.0, MgO % 1.5-2.5, SiO_2% 1.5-2.0, Al_2O_3 %1.0-1.5
Dolomite (BF Grade)	< 50	43000	84,000	Tadpatri	CaO % 28-30, MgO % 19-20, SiO_2% 4.5 max, Al_2O_3 % 0.95, Acid insoluble %5.0 max
Limestone (SMS Grade)	30-60	-	158,500	Rajasthan, MP	CaO % 54%, MgO % 1.5, SiO_2% 1.0, Loi – 43%
Dolomite (SMS Grade)	10-50	-	63,400	Tadpatri	CaO % 28-30, MgO % 19-20, SiO_2% 4.5 max, Al_2O_3 % 0.95, Acid insoluble %5.0 max
Quartzite	10-50	6300	23,500	Kurnool	SiO_2 % 96.0-98.0, P % 0.005

Coal	-	-	834000	Imported/domestic	60% hard coking coal, 25% semi soft coking coal, 15% low ash non coking coal. Average Ash % 9.0 to 9.5,VM 22 to 24%,Mois 7 to 8%.
Purchased Coke	25-75	220800	-	Imported/domestic	CSR-64%, CRI-22-24%,Moist.5 % Ash% 12.5 max, VM 1.5% ,S % 0.65,P% 0.03
Purchased DRI	10-20	-	67,200	Local	Above 80% Metallization
Purchased Scrap	-	-	16,200	Local	Heavy melting scrap
Fe-Cr (HC)	-	-	3,708	Local	Cr-60%,C-6-8%, Si – 4.0%
Fe-Mo	-	-	1,016	Local	Mo -60-65%
Nickel Plates	-	-	1,475	Local	99% minimum
Fe-Si	-	600	3,190	Local	Si 70% (min),C 0.15% max
Fe-Mn (HC)	-	1800	10,000	Local	C 6-8%, Mn 70% (min), Si 1.5% (max),
Lime & calcined dolo (sms grade)	25 -60	34500	-	Local	

The mode of transportation of raw material and products is/will be through rail or road as per the details provided in **Table 2.3**.

Table 2.3: Means of Transportation of Raw Materials and Products

S.No	Means of Transport	Raw material (in TPA)		Product (in TPA)	
		Pre-Expansion	Post-Expansion	Pre-Expansion	Post-Expansion
Road					
1	Iron Ore	95,200	50,000	1,60,200	5,40,000
2	Iron Ore Fines	Nil	Nil		
3	Coal	Nil	Nil		
4	Fluxes	94000	1,26,290		
5	Coke	37,500	Nil		
6	Calcined Lime & Dolo (SMS grade)	34500	-		
Rail					
1	Iron Ore	5,00,000	2,79,000	18,528	3,60,000
2	Iron Ore Fines	Nil	12,29,600		
3	Imported Coal	Nil	834000		
4	Imported Lime stone/Indigenous Dolomite	Nil	3,87,400		
5	Coke	1,83,300	Nil		
6	Imported coal for CDI	Nil	95,400		

2.3 Land Requirement

The proposed expansion is planned within the existing plant area of 887.42 acres (359.27 hect). No further land acquisition is envisaged for the proposed expansion. The details of layout plan are as per given in **Table 2.4** and depicted in **Figure 2.1**.

Table 2.4: Details of Plant layout (in acres(hect.))

S.No.	Particulars	Pre- Expansion	Post Expansion
1.	Plant Area*	55.0(22.27)	225.0(91.09)
2.	Roads & Railway Siding area	75.0(30.36)	100.0(40.49)
3.	Open space	596.8(241.61)	187.4(75.87)
4.	Township	80.0(32.39)	80.0(32.39)
5.	Green Belt (Plant + Township)	80.62(32.64)	295.0(119.43)
Total		**887.42(359.27)**	

Plant area also includes an area of 0.988 acre (0.4 hect.) for truck parking. Township (got environment clearance as a part of existing plant) near Veerapuram village (at a distance of 500 m in NE direction from plant site) will also be constructed.

To meet the additional water requirement, a pipeline is envisaged for transportation of water from Government pumping station at village Kibile Bommepalle which is pumping water from Gandikota reservoir. The route of the proposed pipeline is yet to be finalized.

2.4 Manufacturing Process

The details for major equipments/machinery which are in operation and envisaged for the proposed expansion are as per given in **Table 2.5**.

Table 2.5: Details of Major Equipment/Machinery

S.No.	Particulars	Capacity		
		Pre-Expansion	Expansion	Post-Expansion
1	Raw Material Handling System			
	Wagon Tippler	1000 T/h Iron Ore 583 T/h Coke	Nil	1000 T/hr Iron Ore 583 T/hr Coke
	Conveyor	500 T/h IO 283 T/h Coke	Nil	500 T/hr IO 283 T/hr Coke
2	Sintering Plant Facilities	Nil	1 x 50 m^2 + 1 x 82 m^2	132m^2
3	Blast Furnace	1 x 350 m^3	1 x 750m^3	1100 m^3
4	Basic Oxygen Furnace (BOF)	2 x 25/30 T	1 x 50 T	2 x 25/30 T 1 X 50 T
5	LRF/VD	30 T LRF	2 X 30T LRF 1 X 35 T VD 1 X 50T VD	3X30T LRF 35T VD 1 X 50T VD
6	Caster	5,00,000 TPA Billet Caster	5,00,000 TPA Bloom Caster	10,00,000 TPA
7	Lime Plant a. Calcination Plant b. Dolomite Calcination Plant	Nil	300 TPD 100 TPD	300 TPD 100 TPD
8	Oxygen Plant a. Oxygen	60 + 25 = 85 TPD	180 + 65 TPD	330TPD

S.No.	Particulars	Capacity		
		Pre-Expansion	Expansion	Post-Expansion
	b. Nitrogen	76 TPD	70 TPD	146 TPD
9	Power Plant	Nil	2 x 25 M W 1 x 9 MW	59 MW
10	Air Compressor Plant	3 x 30 m^3 /min	3 X 30m^3 /min	180m^3 /min
11	Coke Oven Plant	Nil	0.6 MTPA	0.6 MTPA
12	Rebar Mill	-	5,20,000 TPA	5,20,000 TPA
13	SBQ Mill	-	2,00,000 TPA + 2,00,000 TPA	4,00,000 TPA

The details of manufacturing process are depicted in **Figure 2.2** & **2.2a** and described as per given hereunder:

2.4.1 Raw Material Handling System

Existing raw material handling system mainly consists of one wagon tippler with side arm charger, set of conveying system, one number of twin boom stacker, pay loaders etc. Capacity of existing wagon tippler is 1000 tph. Conveyor system is provided for transportation of raw materials.

A separate storage yard and transportation system for additional raw materials has been envisaged for the expansion but unloading of the raw materials will be carried out through the existing wagon tippler and set of conveyors. The storage area provided for existing operations and expanded operations are 60,000 m^2 and 2,50,000 m^2 respectively.

❑ ***Unloading, Storage and Transportation of Raw Materials***

The raw materials will be tippled in the existing wagon tippler and tapped from the existing Junction House after wagon tipper building. A stationary tripper will be installed on the existing belt conveyor with bifurcating chute and flap gate so that materials will either be conveyed to existing storage yard or to the new storage yard. For new storage yard, materials will be received and conveyed to storage yard via two sets of belt conveyors of 1000 tph capacity.

The materials will be stored in different beds with the help of slew stacker (1 nos) and stacker cum reclaimer (1 nos) of 1000 tph capacity (each).

❑ ***Reclaiming of Raw Material from Stockpiles***

Two separate series of belt conveyor will receive raw materials with the help of pay loaders (3.2 m^3 capacity) and hoppers which have been provided for two stock piles. However iron ore fines and iron ore lump will be reclaimed through stacker cum reclaimer

(1 no.). This arrangement will ease flexibility in receiving and conveying the raw materials to & from the stock piles.

Since lime and dolo calcination plants have been envisaged for the expansion and there are chances of receiving raw materials through road. Provision has been made for unloading these raw materials via two hydraulic truck tipplers in truck tippler building. From the truck tippler hopper, the material will be conveyed to main series of conveyors.

- ***Conveying of Raw Materials to different shops***

Various belt conveyors are/ will be used.

2.4.2 Sinter Plant

Proposed sinter plant complex will consist of the following units:

- ***Storage and Proportioning Unit***

Iron ore fines, crushed coke breeze, limestone and dolomite, lime fines and rejects from blast furnace (BF) and in-plant return fines will be stored in overhead cylindro-conical steel bins with conical outlets. The sinter mix constituents will be extracted from bins by means of electronic feeders in preset quantities and fed to a collecting conveyor leading to combined mixing and bailing drum. Suitable bin level measuring instruments will be provided to indicate the status of each bin.

- ***Combined mixed and Nodulising Unit***

It consists of a drum (3.5 m dia x 14 m length) in which raw materials will be moistened and mixed. A fixed quantity of material (about 60% of requirement) will be added in the mixing part and rest variable quantity will be added in the nodulising part depending upon the requirement. The estimated retention time for the materials in the drum is 5 minute for thorough mixing and nodulising.

- ***Sinter Plant (main unit)***

It mainly consists of hearth layer and raw material feeding units, ignition furnace, sinter machine proper, hot Sinter breaker etc.

Sinter raw mix will be fed uniformly on the pellets over the hearth layer material. The height of the mix will be 500 mm (max.) including 30-40 mm hearth layer height. Ignition hood will be provided for ignition of the mix to ensure temperature of 1200 to 1300 ^{0}C.

This will be achieved by BF gas (CV 700 kcal/Nm^3) fired heat efficient burners. A post ignition hood will also be provided to avoid chilling of top layer of sinter bed. The recovered waste heat will be utilized for ignition, post ignition and pre heating of raw mix. Multi cyclone will be provided for discharge of clean air from cooler.

Hot sinter breaker will be provided at the discharge end of sinter machine along with trolley mounted grizzly assembly. Hot sinter will be crushed to -150 mm before feeding to cooler.

❑ ***Cooling Unit***

Deep bed dip rail circular cooler will be used to cool the sinter to less than 120 ^{0}C and then it is discharged from hot sinter breaker at 800^{0}C up to (-) 150 mm size, so that it can be transported through conventional conveyor system. Cooler will be provided with all associated facilities like cooler fans, heat recovery system etc. Retention time will be about 1 hour. Cooling will be achieved by up-drafting ambient air through the bed of hot sinter to be cooled.

❑ ***Cold sinter Screening Unit***

Screening of the sinter coming out from cooler will be carried out in two single deck vibrating screens. Product screen will have 10 & 20 mm apertures while the return fines will have 5 mm aperture.

❑ ***Waste Gas Dedusting Unit***

Dry type ESPs at 160 -250 ^{0}C is planned for dedusting of waste gases before entering the main exhausters. The design and operating parameters considered are as per given below:

S.No	Particulars	Unit	Value
1	No. of Sinter machine x area	No. x m^2	1 X 33/50
		No. x m^2	1 X 82
2	Productivity	t/m^2/hr	1.8 /1.27
3	Annual sinter requirement (gross)	tph	1,325,500
4	Annual Skip Sinter requirement	tph	1,192,900
5	Size of the finished Sinter	mm	5-50
6	Annual working days	days	330
7	No. of working hours/day	-	24
8	Gaseous energy consumption for ignition per tonne of BF sinter	K Cal/ton	20,000
9	Coke breeze consumption per tonne of the skip sinter	Kg/ton	72
10	Under grate suction of sinter machine	mm WC	1400
11	Sinter m/c bed height (including 30-40) mm hearth layer depth	mm	500
12	Cooler type Cooler bed height	--- mm	Linear/Circular 1500
13	Temperature of cooled sinter	^{0}C	Below 120
14	Exhauster, No. & Capacity	-	Multiple
15	Dust content in exhaust gases at stack	mg/Nm^3	Below 100

2.4.3 Coke Oven Plant

Coke is a solid carbon fuel and carbon is used to melt and reduce iron ore. The coke making process involves carbonization of coal at high temperatures (1100°C) in an oxygen free atmosphere. Coke is produced in batch processes, with multiple coke ovens operating sequentially. Proposed coke oven plant is non -recovery type and will have installed capacity of 0.6 MTPA coke. The company proposes to use "Non Recovery" coke making technology due to following reasons:

- This type of coke oven has a large coking volume and it is clean in production, which represents advanced trend of the international coking technology;
- To have a limited capital outlay. The investment is low and the construction period is short. According to the present market situation, the investment is about 40 % of that for traditional Byproduct Recovery coke ovens of the same capacity and the construction period is 8-10 months;
- The technology has provision to recover waste heat and produce steam which could be utilized for power generation in future;
- Power consumption is low and the production process is simple. The production process does not require any steam and cooling water;
- The technology has the flexibility to blend clean coal with the hard imported coking coal, & proposes to blend upto 30% of soft coking coal, which will maintain the quality as well as give the cost advantage; and
- A comparison of by product recovery and non recovery technologies are as per given hereunder:

S.No	By Product Recovery Coke Ovens	Non Recovery Coke Ovens
1	By products recovered : (Gas, Tar, Ammonia, Naphthalene, Benzol)	No recovery of byproducts. Complete combustion carried out with excess air.
2	Pollution norms met with necessary measures	Inbuilt advantage of no pollution due to negative pressure in the oven.
3	Closely sized product & hence low crushing	Lumpy Coke & hence high degree of crushing.
4	Specific Coal blend	Wider coal blend & inferior coals can be used.
5	Lower flexibility of operation	High Flexibility
6	Long construction time	Short construction time
7	Refractory Bricks of complex shapes	Refractory Bricks of simple shapes.

In the non –recovery coke oven plant, the carbonization process takes place from the top by radiant heat transfer and from the bottom by conduction of heat through the sole floor. Primary air for combustion is introduced into the oven chamber through several ports located above the charge level in both pusher and coke side doors of the oven. Partially combusted gases exit the chamber through "down comer" passages in the oven wall and enter the sole flue, thereby heating the sole of the oven. Secondary air is introduced at this stage for further combustion. Combusted gases will be collected in a common tunnel and exit via a stack, which creates a natural draft in the oven. Ovens operate under negative pressure and at a temperature at which all potential pollutants break down into combustible compounds. This technique consumes the by-products, eliminating air and water pollution. The waste gas exits into a waste heat recovery boilers, which generates steam for power station.

Due to high coking temperature (1200-1250 ^{0}C), the hydrocarbons in the coke oven gas are burnt. Controlled introduction of tertiary air in the common flues ensure that there are no remnant combustible matter in the waste gases going to the stack. Particulate emissions out of the stack or into the boiler are normally below 50 mg/Nm^{3}. This will be achieved through charging of Coal in cake form, use of a charging box on the pusher cum charging car on the one hand and due to system of tertiary air entry for complete combustion of all products. The technical specifications of considered coke oven plant are as per given below:

S.No.	Particulars	Value
1	No. of ovens for coking	2x72
2	Length of coking chamber	13572 mm (cold)
3	Width coking chamber	3627 mm
4	Height of coking chamber	~3000 mm
5	Central distance of coking chamber	4446 mm
6	Height of coal cake	1050 mm
7	Coal load per chamber	42.4 tons
8	Moisture of coal loaded in oven	10%
9	Cycle time (coking period)	65 hours
10	Max. temperature in coking chamber	1320 ^{0}C
11	Flue temperature at oven bottom	1300 ^{0}C

2.4.4 Blast Furnace

KGSL is operating the existing plant with blast furnace of the capacity 350 m^3 and one pig casting machine of 1080 t/d capacity. One additional blast furnace (BF) of 750 m^3 capacity is envisaged for the proposed expansion. The blast furnace is proposed to operate with 70% sinter, 30% iron ore, coke, fluxes & additives with pulverized coal injection and oxygen enrichment. Hot blast is also enriched by 4 % oxygen. The technical specifications of the proposed BF are as per given below:

S.No.	Particulars	Values
1	No of blast furnace	1
2	Useful volume	750 m^3
3	Production (tpd)	1945
4	Slag basicity, CaO/SiO_2	0.95
5	Hot blast Temperature (^0C)	1000-1100

The hot metal produced will be transferred to Steel Melting Shop (SMS) I (expanded) and SMS II (new) for steel making. In case both the SMS are not in a position to accept the hot metal, the same will be transferred to pig casting machine for cold pig production. The liquid slag will be granulated at cast house granulation unit and will be shifted to slag storage yard through conveyors.

Existing pig casting machine with a capacity of 1080 tpd will be sufficient to meet the requirement of expansion. The pig will be discharged into wagons and will be sent to pig storage yard which will be equipped with magnetic crane for loading and unloading facilities.

The top gas from BF will be fed to dust catcher lined with gunning castable for primary cleaning, where about 65-68% of dust will be removed from the gas. It is envisaged to utilize BF Gas for power generation which is other wise utilized in the stove heating after treatment in Gas Cleaning plant or flared though flare stack.

2.4.5 Steel Melting Shop

To establish the expanded capacity, it is proposed:

- To enhance the production capacity of existing Steel Melting Shop (SMS-I) from 0.3 million tpa to 0.6 million tpa by 2/2 converter operations considering improvement in converter lining life with introduction of slag splashing technology; and
- SMS -II to produce cast products @ 0.4 million tpa.

The details of main equipment/machinery envisaged are as per given hereunder:

SNo.	Particulars	SMS (after expansion)	
		SMS-I	SMS-II
1	Basic Oxygen Furnace (BOF)	2x35/30	1x50t
2	Ladle Furnace (LF)	1x35t/30 t	2x50t
3	Vacuum Degassing (VD) Unit	1 x 35 t	1x50t
4	Billet Caster	1x3 strand (0.5 million tpa)	-
5	Bloom Caster	-	1x2 strand (0.5 million tpa)

** t- tonnes*

Hot metal will be delivered to the hot metal desulphurization station from BF by rail cars in 65 t capacity blast furnace ladles. The locomotive will position the rail car inside the environment enclosure (HMDS hood). The hood will form an operating platform which will carry the lance hoist & temperature sampling hoist. The lance change will be done manually with the help of Jib crane. The temperature & sampling probe will be changed manually from the operating platform. The desulphurising agent (Calcium Carbide or Magnesium granules) is injected into hot metal through the lance with nitrogen as carrying gas to remove sulfur. Hydraulic operated slag raking machine is available to remove the slag after the desulphurization. The slag that is skimmed from the surface of ladle will be collected.

Further Hot metal will be collected from the HMDS into the ladle and will be charged into BOF converter with the help of charging crane. Hot Metal, scrap and DRI will comprise the major charge mix for the BOF operation. The scrap, iron ore and DRI (sponge iron) act as coolant in BOF steel making. The converter will be provided with the suppressed combustion system. Top conical portion of the converter vessel will be water cooled. The slag will be disposed of using slag pot transfer car to the slag pits in the slag bay.

Soft brunt lime and calcined dolomite will be used as flux in the converter. Siliceous slag formed during the early stages of steel making operation in BOF is unsaturated with MgO lime. This will result in considerable refractory wear due to slag attack on the lining during the early stages of blow. One of the methods to reduce the slag attack is to super saturate the initial slag with MgO. This is achieved by the addition of calcined dolomite and thus the dissolution of MgO from the lining is minimized.

The liquid in BOF will be ready for tapping into a pre heated ladle after attaining the required temperature & chemistry. The furnace will then be ready to commence the next

melting operation. Slag splashing will be carried out by using N_2 with the help of oxygen lance.

Pre-determined quantity of ferro alloys and de-oxidizers will be added into the ladle during tapping based on the desired steel grade.

After treatment of liquid steel at ladle furnace, only special and alloy steels requiring vacuum treatment will be brought to VD unit. Ladle will be placed inside the vacuum tank after which tank will be sealed with tank cover. Argon gas will be simultaneously purged into the liquid steel during the entire vacuum treatment. Sample will be taken and if necessary alloying elements will be added through vacuum lock hopper to get the desired chemical composition. Vacuum degassed steel will be shifted to ladle turret for casting.

The steel ladle after treatment at the ladle furnace/vacuum degassing will be picked up by ladle handling crane and placed on the ladle turret of the caster. A pre-heated refractory lined tundish mounted on the tundish car will be moved from its parking position to the casting position. A refractory shroud will be fixed to the ladle slide gate, which will then be opened to allow flow of liquid steel into the tundish.

The temperature maintained in BOF, LF and VD will be 1660 ^{O}C, 1625 ^{O}C & VD-1600 ^{O}C respectively.

The partially solidified strand after leaving the mould will pass through strand guide roller segment where intensive but controlled cooling of the strand will be carried out by direct cooling. The solidified strand will be guided through strand guide system and withdrawal and straightening unit before entering the cutting zone.

The bloom/billets will be cut to pre-determined length by oxy-propane torch cutting machines. Sized bloom/billets will be transported through the run out roller tables to cross transfer and walking beam cooling bed and marked for identification by automatic marking machine.

2.4.6 Rebar Mill

A rebar mill complex has been envisaged for the proposed expansion with a capacity of 5,20,000 tpa bars. The mill will use continuously cast billets of 130 mm x 130 mm & 160 mm x 160 mm cross section and of 12000 mm length as feed material for further rolling of rebar of sizes 8mm to 40mm.

According to the production plan, billets will be placed to charging grid with the help of crane which will be charged to reheating furnace one by one via a charging roller table for reheating the billets. Depending upon the steel grade, the billets will be heated up to 980~1150°C by passing through each zone of reheating furnace through walking hearth mechanism.

Reheating furnace of 100 tph capacity with length of 20800 mm and width of 12700 mm is envisaged which will be using furnace oil & BF gas as a fuel. The temperature of each zone will be controlled through proper automation.

After proper heating of the billet inside reheating furnace, billets will be discharged via discharging roller table to 18 stand continuous mill, individually DC motor operated for rolling it to desired rebar size (from 8mm to 40mm). Depending upon the rolling size either some or all 18 stands will be used. Rebar coming out of the finishing stand of temp around 900°C will enter the water cooling unit for online quenching.

That means, the surface temperature of the stock will drop rapidly to 250°C~300°C by means of forced cooling in cooling box. This kind of product presents high tensile strength and can improve the strength of rebar. Number of cooling sections to be used and water flow rate will be determined according to the requirement of steel grade and dimension in order to reach the preset rolling temperature.

The continuous rolled rebar after cooling will be cut online in multiple length of commercially required through dividing shear to accommodate in 10×90m walking-rack cooling bed for further natural air cooling. The cooling bed exit roller table will transport the grouped bar to the cold shear for further cutting of length as required by customer.

The bar after length dividing will be transferred to bundling unit through chain cross transfer device and roller table for automatic bundling followed by bundle weighing, labelling and collection to the finished product bay.

2.4.7 Special Bar Quality (SBQ) Mill

Two SBQ mills of total capacity 4,00,000 tpa (2,00,000 + 2,00,000 tpa) have been envisaged. The mill will roll continuous cast blooms into rounds and RCS as per the details given below:

S. No.	Product	SIZE RANGE (mm)
1.	Rounds	16 mm dia. to 85 mm dia (finished)
2.		90 mm dia. to 130 mm dia. (Semis)
3.	RCS	55-75 (Finished)
4.		80-115 (Semis)

The basic operation of this mill will also be the same as the rebar mill. The only difference will be as it is having 60 T/Hr reheating furnace.

2.4.8 Oxygen Plant

In addition to 85 tpd existing oxygen plant, two more oxygen plants of 180 tpd & 65 tpd capacity have been envisaged to meet the requirement of oxygen, nitrogen and argon for the proposed expansion. The process shall be cryogenic based having air compressors, air separation unit, oxygen compressor, liquid oxygen compressor, liquid oxygen storage facilities etc. The envisaged capacity of air separation units is 330 tpd.

Oxygen, nitrogen and argon will be produced by air separation process based on low pressure cryogenic cycle and double column rectification system. The unit will be able to produce gaseous as well as liquid products. The purity of the gases so produced will be as per given below:

S No.	Product	Purity %
1.	Gaseous Oxygen	99.6%
2.	Gaseous Nitrogen	99.995%
3.	Argon	99.995 %

Oxygen will be required for oxygen enrichment in the BF, blowing in the BOF, heating of BOF lining, cutting of blooms/billets in continuous casting plant and for general purpose use in various units of the steel plant. The average demand of the oxygen is estimated to be about 0.232 MNm^3/day.

Nitrogen will be mainly required as carrier gas in slag splashing in BOF, stirring of BOF, coal dust injection system, bell less top equipment for blast furnace, purging in GCP of BOF and also for occasional purging of fuel gas pipelines and equipment.

Argon will be required for shrouding in the tundish and mould in the continuous casting plant, stirring in ladle. Argon will also be required for laboratory purpose.

2.4.9 Lime and Dolo Plant

One calcined lime kiln of 300 tpd capacity and one calcined dolo kiln of 100 tpd capacity will be required to meet the requirement of basic flux of SMS.

Raw limestone and dolomite of size 25-55 mm will be charged to respective vertical shaft kiln for calcination of lime stone and dolomite. Before charging into kiln, the undersized limestone and dolomite of size <25 mm will be separated out by the suitable screen. Limestone and dolomite will be calcined at a temperature of 1050 ºC-1150 ºC to achieve the soft burnt reactive lime and dolo.The fuel used will be BF Gas & Coal fines.

The waste gas from the kiln will be cleaned in the bag house, designed for outlet concentration of dust less than 150mg/Nm^3.

2.4.10 Co-Generation Power Plant

It is proposed to set up facilities for 59 MW power generation as per breakup given below:

- 2 X 25 MW power generation from waste heat gases produced from coke oven plant; and
- 1 X 9 MW power generation from gases produced from blast furnace.

2.4.10.1 Coke Oven waste heat gas based Power Generation (2 X 25 MW)

❑ **Waste Heat Recovery Boiler(WHRB)**

The WHRB will be sized to extract the maximum heat energy from the Coke oven off gases.The amount of heat recovered will depend on the the heat carried by high temperature flue gas produced. The design considers using two condensing steam turbine generator units. The technical specifications of the WHRB are as per the details given below:

Steam Output, MCR, TPH	3X74
Coke oven waste heat gas temp	900 to 1100

WHRBs will be of unfired, single drum, top natural circulation Type. The boiler will consist of economizer, evaporator, superheater, integral piping, flue gas ducting with expansion joints, supporting structures, platforms and walkways, soot blowers etc. The internals of boiler pressure parts will be designed to withstand mechanical wear and tear from the

abrasive dust particles of slag to be carried by the waste gases in addition to other mandatory factors. The superheater will be arranged in two stages with a spray type de-superheater in between to control the steam temperature.

The steam and water pipeline will use header systems. The equipments and facilities for the steam power station, e.g. thermal de aerator, high & low-pressure heat exchangers, feed water pump for boiler, cooling circulating pump, steam condenser and condensate pump will be there. The flue-gas desulphurization device will be so selected that it will match the WHRB. The flue gas from three boilers will have three chimneys, one for each boiler for emitting flue gases after passing through the desulphurization tower and draught fan.

The flue-gas desulphurization process will be a wet chemical desulphurization. The working principle is to spray alkali wash into the desulphurization reaction tower. The atomized wash will come in contact with SO_2 in the flue gas and produce $CaSO_3$ which will be converted to $CaSO_4$ by reacting with oxygen. $CaSO_4$ so produced will be separated from the flue gas in the desulphurization reaction tower and will be discharged into the settling pond. The clean water from the settling pond will be sent again into the lime-dissolving tank. Make-up water will be added, if required. The deposit in the settling pond will be cleaned periodically. The basic mechanism for desulphurization is:

$$SO_2 + Ca(OH)_2 = CaSO_3 \cdot H_2O$$

After adding oxygen :

$$2\ CaSO_3 \cdot H_2O + O_2 = 2\ CaSO_4 \cdot H_2O$$

Individual flue gas cleaning system is envisaged for each boiler.

The industrial water will be from the production water-supply pipe in the plant area, and will be sent to the sampling cooler of the boiler. The water drain will be connected to the quenching water system.

❑ **Turbine Generator**

The turbine will be a condensing type and cooling will be carried out by indirect water cooling system. The other specifications are as per given below:

Turbine	
(High pressure multi stage)Medium-pressure condensing turbine Rated power	2x25 MW
Steam pressure before main valve	95 kg/cm2
Steam temperature before main valve	535 ^{o}C
Rated throttle flow of turbine	110 tph
Normal temperature of cooling water	25 ^{o}C
Max. temperature of cooling water	35 ^{o}C
Exhaust pressure	0.188 kg/cm2
Steam consumption	
Generator	
Rated power	2x25 MW
Rated voltage	11 KV

2.4.10.2 Blast Furnace gas based power generation (1 X 9 MW)

KGSL proposes to utilize BF gas for power generation which is other wise utilized in the stove heating after treatment in Gas Cleaning plant or flared though flare stack. The basis composition of the blast furnace gas (% vol. basis) considered for design is as per given hereunder:

CO	18.4 %
CO_2	18.4 %
H2	1.8 %
CH_4	0.5 %
N_2	51.6 %
O_2	0.0 %
Moisture	9.3 %

The availability of BF Gas from the existing blast furnace of 350 m^3 is 49000 Nm^3/hr on sustainability basis at 50º C temperature with calorific value of 680-700 Kcal/m^3.

The gas produced from envisaged blast furnace of 750 m^3 will be used for in-house consumption. It will be used for reheating furnace of the rolling mills, sinter plant furnace, ladle heating of steel melt shop, lime calcination plant, blast furnace stoves heating, etc.,

A total of 9 MW power generation is envisaged by installing a boiler of 45 tph MCR capacity (outdoor type natural circulation) which will use BF gas and furnace oil as fuel and will have other auxiliaries such as water cooled furnace, steam and water drums,

super-heated attemperator, economizer, air heaters, soot blowers, BFG Firing system, draft system, integral piping, instrumentation and control structure etc. The operating parameters for the boilers are as per given here under:

Maximum continuous output at the Super heater outlet	45tph
Rated steam pressure after super heater at outlet of Boiler	66 kg/cm^{2}g
Superheated steam temperature at Super heater outlet	490 º C
Feed water temperature at MCR at inlet to Economizer (De aerator outlet).	130 º C
Boiler Type	Natural Circulation Non Reheat type
Type of fuel	BF gas supported by Fuel Oil

Following boiler auxiliaries as given below are envisaged along with 45 tph boiler;

- A furnace is envisaged with water walls: a fin welded construction (membrane type) made of seamless steel tubes except for the floor and the front wall which shall be refractory lined. Two (2) nos. of burners are envisaged and no direct flame impingement is envisaged. Water wall headers shall be provided with suitable openings for inspection and cleaning of the internals with weld-on caps. If any water wall header extends outside the setting, a removable metal cover will be suitably installed with proper sealing and fastening. All headers shall be located outside the path of gas;
- Drums will be fusion-welded construction with semi-ellipsoidal dished ends. The drum will be protected from flue gases in the super heater zone using refractory. The interior of the drum will be cleaned by shot blasting after fabrication. Water entrained in the outgoing steam at any load will be negligible not exceeding 0.5% by weight in any case;
- Super-heater headers is generously designed and located outside the active flue gas paths. The headers will be provided with necessary drain valves. Super-heater outlet headers will have connections suitable for welding to the main steam piping without imposing large moments on the piping;
- Spray type attemperator located between primary & secondary super-heaters will be provided for regulating the temperature of super-heated steam. Water for cooling will be taken from boiler feed system. Attemperator with all interconnecting piping, control valves and supports is envisaged. The attemperator is capable of maintaining any

selected value of steam temperature in the range 490°C between 50% and 110% of Boiler MCR;

- Economizer with distribution header, feed piping from distributing header to the inlet headers, inter-connections of economizer with the drum and all required mountings and fittings such as drains, vents, washing connections and instrument connections are envisaged;
- Boiler outer casing shall be provided with steel sheet cladding of not less than 2.6 mm thickness wherever used and ribbed aluminum cladding for rest of the areas of 20 SWG;
- The boiler shall be provided with adequate number and size of drum and super heater safety valves;
- The boiler shall be equipped with BF gas and furnace oil burning equipment. The igniter to be provided shall be suitable to start up boiler with furnace oil. Burner provided will be of dual fuel type capable of firing maximum of 100% of BF gas available, and 20% Furnace oil (for boiler startup). Burner shall be provided with one UV scanner and one signature scanner strategically located in the burner for enhanced flame safety;
- One forced draught fan each 100 % Boiler MCR rating is envisaged along with one induced draught fan each 100% Boiler MCR rating. Separation of flue gases stream in ductwork before induced draught fans shall be avoided;
- Blow down and drainage system shall be provided with common continuous blow down and an intermittent blow down vessel adequately sized. The flash steam from the blow down vessel shall be emitted to atmosphere and the condensate will be discharged to the nearest drain; and
- The unit will be provided with a deaerator with feed water tank of approx 20min storage capacity when the unit is running on full load.

❑ **Turbine Generator**

The unit will consist of one steam Turbine Generator (TG) Set having generator capacity of 9 MW at generator terminals. The turbine will be provided with electro hydraulic/ electronic governing system. The lubrication oil system of the TG set will consists of a fabricated steel tank, one main oil pump, directly driven from turbine shaft, an auxiliary AC motor driven oil pump, DC emergency oil pump, oil coolers etc. A quick closing type stop valve will be provided at the steam inlet line to the turbine. This valve will be tripped or closed in the event of over speed of the turbine or during any emergency condition. The

TG set will also be provided with all auxiliary systems and equipment, eg., shaft gland seal system , air cooling system for generator and CO_2 based fire protection system. All necessary protective and supervisory instruments will be provided to ensure trouble free and efficient operation of the unit.

Condenser of surface type, water cooled and of twin pass design for cleaning of one half during the other half is in operation is envisaged. A relief valve will be provided for 100% capacity at least condenser pressure relieving. Stainless steel will be used as tube material.

The Condenser shell will be of welded construction suitable for internal pressure likely to develop during operation. Sufficient drips, drains and vents will be provided. Baffles will be placed at all inlet and outlet to prevent the direct impingement on the shell and Condenser tubes. The condenser will be connected to turbine exhaust flange through an expansion Bellow.

The water boxes will be of divided flow type with proper connections so that one half of the condenser can be shut down for cleaning while the other half is in operation. The water boxes will be designed to with stand the shut off head of circulating water pumps i.e. 10Kg/cm^{2}g (appox). Removal of water boxes will be possible without disturbing the condenser tube sheet.

Air Ejectors will be steam operated. There will be start -up ejector and two sets of running ejectors. The ejectors will have adequate capacity to remove non-condensable and associated water vapor from the condenser to achieve the required vacuum. The ejectors will be completed with suitable shut-off valve, isolating valves, safety valves, interconnecting piping, strainers, vacuum drainage, traps, vent valves and gauge glasses etc. All valves used in vacuum lines will have special provision of sealing. The system shall have common inter cooler and after cooler.

The general technical parameters of the turbine are as per given hereunder;

Type of Turbine	Straight Condensing / extraction Multistage, horizontal Spindle, bladed design, axial Flow, impulse/reaction
Number of Turbine	One
Turbine rating	9.0 MW
Rated steam pressure	62Kg/cm^2 abs at Turbine inlet
Rated steam temperature	490 º C

The operating parameters of turbine are as per given here under;

Power output at generator outlet	9.0 MW
Turbine rated speed, RPM	7500
Generator speed, RPM	1500
Gear-box ratio	7500: 1500
Max. noise level at 1.0m distance from Turbine-Generator set	85dB

2.4.11 Compressed air Facilities

Compressed air, both industrial and instrumental quality at 6-8 kg/cm^2 (g) will be required for different units of the plant. A centralized compressed air station has been envisaged to meet this requirement.

2.4.12 Laboratory

A well equipped laboratory for testing of raw materials, fuel, products, water is proposed to be established. Facilities for environment monitoring shall also be a part of laboratory.

2.4.13 Auxiliary Facilities

Various services facilities like repair and maintenance shop, central stores, administrative building, canteen, guesthouse, time office, laboratory etc. are also proposed to be provided.

2.5 Utilities

2.5.1 Water Requirement

The total average water requirement of the existing plant is 1446 m^3/day. After commissioning of proposed expansion the same will be 21, 446 m^3/day. The detail breakup of water consumption in existing plant and expansion are as per given in **Table2.6** & **2.7**

Table 2.6: Water Requirement (m^3/day) for Existing plant

Purpose	Avg. Demand	Peak Demand	Source	Type Treated / untreated/Fresh/ Recycled	Remarks
1. Project					
Process	645.0	710.0	Penna river	Treated in Raw water treatment plant	
Cooling water	387.0	425.0		--do--	
DM water	0.0	0.0		NA	
Softener	34.0	40		Treated	Used only in SMS
Dust Suppression	50.0	60.0		Treated in Raw water treatment plant	
Drinking	80.0	100.0		--do--	
Green Belt	250.0	350.0		--do--	
Fire Service	Water stored in reservoir and overhead tanks is available				
Others	Nil	Nil			
2. Township	Nil	Nil			No township
TOTAL	**1446**	**1685**			

Table 2.7 Water Requirement (m^3/day) for proposed Expansion

Purpose	Avg. Demand	Peak Demand	Source	Type Treated / untreated/Fresh/ Recycled	Remarks
1. Project					
Process	5500.0	6000.0	Penna river & Gandikotta reservoir	Treated in RWTP	It is to be used in steel plant process
Cooling water	12000.0	13000.0	Do	Treated in RWTP	It is to be used in steel plant process & for power plant
DM water	1600.0	1760.0	Do	Treated	It is to be used in Power plant
Softener	400.0	540.0	Do	Treated	It is to be used in SMS unit
*Dust Suppression	150.0	180.0	Treated water	Waste water treated through effluent treatment plant	Treated waste water is to be used for dust suppression
Drinking	200.0	250.0	Penna river & Gandikotta reservoir	Treated in RWTP	
*Green Belt	380.0	450.0	Treated water	Waste water treated through sewage treatment plant	Treated waste water is to be used for Green belt
Fire Service	Water stored in reservoir and overhead tanks is available				
2. Township					

Purpose	Avg. Demand	Peak Demand	Source	Type Treated / untreated/Fresh/ Recycled	Remarks
*Green Belt	400.0	450.0	Treated water	Waste water treated through sewage treatment plant	Treated waste water is to be used for Green belt
Drinking	300.0	350.0	Penna river & gandikotta reservoir	Treated in RWTP	
Others (Please specify)	Nil	Nil			
TOTAL (fresh water)	**20000.0**	**21900.0**			* (For Dust suppression & for Green belt, treated waste water is to be used)

Water requirement for the existing plant is abstracted via infiltration bore wells (18 nos.) on the bed of Pennar river at a distance of 5 km from plant. While for the proposed expansion, additional water requirements will be met from the Gandikota reservoir which is about 22 km from plant site. Approval @ 2.5 MGD from Pennar river for existing operation and additional @ 5 MGD for proposed expansion have been obtained and same are enclosed as **Annexure 2.1**.

The salient features of the Gandikota reservoir is as per given hereunder:

Particulars	Unit	Quantity
FRL	(m)	209.000
MDDL	(m)	202.650
Storage	TMC	16.500
	MCM	467.587
	MLD	1281.060
Demand with respect to Storage	%	1.772
Demand with respect to dead storage.	%	11.059

As evident from above discussion, the demand for the proposed expansion is marginal (<2% of the total storage) as compared to the storage capacity of the reservoir.

Raw water pumped from the Pennar river is stored in two water reservoirs, each having capacity of 85000 m^3. Stored water is passed through the sand filters before dispatching for various usages as mentioned above.

2.5.2 Power Requirement

The details of power requirement and its sources for existing and proposed expanded plant are as per given in **Table 2.8** & **2.9** respectively:

Table 2.8: Power Requirement (MW)

Unit	Plant	Township	Total
Present (in existing)	15.48	-	15.48
Proposed	56	4.0	60
Total	**71.48**	**4.0**	**75.48**

Table 2.9: Sources of Power (MW)

Particulars	APTRANSCO SEB/Grid	Captive power plant	DG Sets (as stand by)
Existing	15.48	-	2x1250 KVA
Expansion	60.0	2x25+1x9=59.0	2x250 KVA
Total	75.48	59.0	

Power requirement for the existing plant is 15.48 MW which is met through 132 KV transmission line from Tadpatri. For the proposed expansion additional requirement of 60 MW power have been sanctioned by AP Electricity Board (APEB) through new 220 KV transmission line from Thimmapuram (23 km from the Plant Site). Withdrawal of power from grid will be regulated as per the proposed in-house power generation.

2.5.3 Storage of Fuels & Chemicals

LPG/Propane will be used for torch cutting machine in the CCP and general cutting to be required at various locations using portable oxygen cylinders. LDO is proposed to be utilized as fuel for the reheating furnaces of SBQ mill and Rebar mill. In addition to this, LDO will also be utilized as fuel for lime and dolomite kiln, ladle heating, initial startup, flame stabilization and as a supporting fuel in the gas fired boilers etc. The details of fuel used in different processes are given in **Table 2. 10**.

Table 2.10: Details of Consumption of Fuel

Fuel	Daily Consumption		Calorific value (Kcals/kg)	% Ash	% Sulphur
	Pre-Expnasion	Post-Expansion			
LPG/Propane	Nil	1.62 T/day	23,500	-	
Furnace Oil	5000 L/day	10000 L/day	9600	-	4.5% max
LDO	Nil	200 KL	9800		3.5% max

Facilities of storage of fuel (inflammable, explosive/ hazardous or toxic substances) within the plant premises, their storage capacity and means transportation are as per given in **Table 2.11**

Table 2.11: Facilities for Storage

Particulars	Number of Storage's		Maximum Quantity of storage at any point of time		Source of Supply	Means of transportation
	Pre-Expansion	Post-Expansion	Pre-Expansion	Post-Expansion		
Furnace oil	1	1	750 m^3	750 m^3	IOCL	Road
LPG/Propane Gas	1	2	10 T	2x16t	IOCL	Road
LDO	1	2	700 m^3	2x700 m^3	IOCL	Road

2.6 Pollution Management

2.6.1 Waste Water Management

The waste water generated from the existing plant is 120 m^3/day and will be 980 m^3/day after proposed expansion as per the details given in **Table 2.12**

Table 2.12: Details of Waste Water (m^3/day)

Particulars	Existing	Expansion	Treatment & Disposal
Plant process water			
Plant operation	15.0	80.0	Will be used for slag quenching /cooling
Water treatment Plant (DM or Softener)	0.0	140.0	After primary treatment as per details given below, treated water will be sent to coke oven plant for coke quenching
Cooling tower/Blow down	25.0	140.0	Will be used for slag quenching /cooling
Total	**40.0**	**360.0**	
Domestic water			
Domestic (from plant)	80.0	200.0	Will be treated in STP and treated waste water will be used for dust suppression (dust pollution control) & for green belt development.
Domestic (from Township)	0.0	300.0	
	80.0	**500.0**	
Total	**980.0**		
Quantity of water recycled			
(in %)	95 %		
(in cum/day)	930		

2.6.2 Waste Water Treatment Plant

❑ **Treatment of Waste Water from Plant**

Blast furnace & Steel melting shops shall have individual sludge treatment plants at their premises for gas cleaning/cooling. The waste from the process & blow down water from different process units, mainly from BF, SMS, Sinter/oxygen/coke oven & other plants will be collected to a common water pond (Guard pond).

The DM water from the power plant will be used to quench the coke in coke oven plant. Remaining waste water from power plant will be sent to neutralization pit. The neutralized water will be sent to settling tank, where sludge will be removed by gravity & the rest of the water will be used directly for the dust suppression or will be sent to guard pond.

.

In Guard pond, excess waste water from all process units & power plants will be collected. Water will be allowed to settle down. Part of dust/sludge will be settled in the bottom. The clear overflow water from the pond will flow to the sewage treatment plant by gravity.

❑ **Treatment of Domestic Waste Water**

Two separate Sewage Treatment Plants (STP) for treatment of domestic waste water generated from plant and township are envisaged with a capacity of 300 m^3/day for plant and 400 m^3/day for township.

The details of STP described hereunder are tentative, based on similar type of operation and shall be modified at the time of detailed engineering.

The scheme of treatment comprises of primary and secondary treatment and the anticipated quality of effluent at inlet and outlet considered for design of STP is as per given below:

S. N	Parameter	Quality of Waste Water	
		At Inlet	At outlet
1	PH	6.5-9.0	6.5 - 9.0
2	TSS (mg/l)	400	<100
3	BOD_5 at 20 ^0C (mg/l)	250-350	<30
4	COD	500-700	<150
5	Oil & Grease (mg/l)	50	<10

The wastewater from different sources shall be fed to equalization tank of 300m^3/400 m^3 after passing through the screen and oil & grease separators. In the equalization tank, air shall be passed through blower for wastewater mix-up and then wastewater shall be sent to biological tank.

In the biological tank, air shall be passed through fine diffused aeration system (diffusers) for aerobic treatment. The treated wastewater shall be sent to clarifier for settlement of

suspended flocs. Clear water from clarifier shall be sent to break tank and then to Bi-media filter & activated carbon filter. At last, after chlorination, wastewater shall be used for greenbelt/plantation. The sludge so generated shall be used as manure for plantation within project premises.

2.6.3 Solid Waste Management

The details of solid waste generated from various process units in existing and proposed plant and their disposal plan are as per given in **Table 2.13**.

Table 2.13: Solid Waste Generation & Management

Nature of Waste	Composition	Quantity TPD		
		Pre Expansion	Post Expansion	Mode of Disposal/Recycling
Granulated Blast Furnace Slag	Oxides of Calcium, Magnesium, Silicon, Aluminum, Iron etc.	345	1150	Is/shall be sold to Cement Plants
Cast House Scrap	Pig Iron scrap	1	3	Is/shall be Sent to BOF
BOF Scrap	Steel scrap	12	40	Is/ shall be used in Steel Making
Sinter Plant Dust (ESP, Multi-cyclone)		0	193	Shall be recycled to Sinter Plant
Flue dust from the BF	Oxides of Iron, Si, Al, Mn, Ca, Mg	13	43	Shall be recycled to Sinter Plant
Coke fines from the Stock House	Coke fines	25	83	Shall be recycled to Sinter Plant
Scale from rolling mills & Continuous casting	Oxides of Iron	6	20	Shall be recycled to Sinter Plant
Steel Scrap	Scrap	20	67	Is/ shall be recycled to BOF
Lime Plant Dust	Lime	0	67	Shall be recycled to Sinter Plant
Steel Making Slag	Oxides of Iron, Ca, Si, Al	115	383	Partially it will be used as flux in Blast Furnace & rest will be used for selected land filling.
Converter Gas Cleaning Sludge	Oxides of Iron, Ca, Mg, Si, Al, Mn	18	60	Shall be recycled to Sinter Plant
BF Gas Cleaning Sludge	Oxides of Iron, Ca, Mg, Si, Al, Mn	5	17	Shall be recycled to Sinter Plant
Used Lead Acid Batteries	-	10	15	Shall be sold to selected parties.
Spent/Used Oil	-	3.7 m^3	10 m^3	To be sold to selected parties
Process dust	-	4	10	will be used in Sinter Plant
Sludge from Sewage treatment	-	-	3.5	will be used as manure
Sludge from primary treatment plant	-	-	2.0	will be used for land filling after ensuring its status for hazardous waste.
Sludge from coke plant desulphurization units	Gypsum	-	10	will be used for selective land filling.

It is proposed to deposit Steel Making slag about 250T/day in the low lying areas in the plant. An area of 4000 m^2 will be ear marked for primary dumping of slag & salvaging of scrap. As enclosed in **Annexure 2.2**, M/s Penna Cement Industries Ltd which is about 8 km from the plant site has principally agreed to purchase 100% generated granulated slag.

2.6.3 Air Emission Management

❑ **Fugitive Emission**

The details of the main sources of the fugitive emissions are as per given hereunder:

1. Wagon Tipper - (Iron Ore & Coke)
2. Screen house: Raw Material Handling System
3. Belt conveyors of RMHS
4. Stock house of RMHS
5. Roads

The salient features of the management are described hereunder:

- Jet Pulse bag filters with designed outlet concentration of 150 mg/Nm^3 at all dry material conveying transfer points;
- Dust suppression system;
- Vacuum operated road sweeper; and
- Thick green belt barrier,

❑ **Stack Emission Management**

The details of stack emission and its management for existing plant and its proposed expansion are as per given in **Table 2.14** and **2.15** respectively.

2.7 Green Belt Development

Green belt is already developed over an area of 32.64 hect (80.62 acres). Currently 28,000 of plants are raised with 85 % of survival rate. For the proposed expansion a total of 119.43 hect. (295 acres) of area is proposed to be developed under green belt/plantation which is 33% of the total project area. The plants selected will be native species and sapling will be planted @ 1500/hect.

2.8 Manpower Requirement

The detailed break up of the manpower during operation phase is as per given in **Table 2.16**.

Table 2.14: Details of Point Source Air Pollution Management and Stacks (Existing)

Process Units	Sub Units	Stack Code	No. of Stack	Air Pollution Control Equipment	Height of Stack	Dia of Stack	Temp. of Gas	Velocity of Gas	Volumetric flow rate	Permissible Outlet Concentration (mg/Nm^3)			
					(m)	(m)	° C	(m/sec)	m^3/hr	Dust*	SO_2	NO_x	CO
Blast Furnace (01)	Flare Stack	114	1	Dust catcher, Venturi & Scrubber	46.9	0.92	250	18	45000	< 150	-	-	-
	Stove Chimney	116	1	-	60	2.9	135	1.09	12000	< 150	67	50	NA
	Slag Granulation Stack	119	1	-	35	1.2	71	2.14	8747	< 150	-	-	-
SMS	SMS main Stack	112	1	Dust catcher, scrubber, Venturi, Fume Extraction System	70	1	63	12	42000.0	< 150	-	-	-

As per consent to operate issued by APPCB

Table 2.15: Details of Point Source Air Pollution Management and Stacks for Proposed Expansion

Process Units	Sub Units	Stack Code	No. of Stack	Air Pollution Control Equipment	Height of Stack	Dia. of Stack	Temp. of Gas	Velocity of Gas	Volumetric flow rate	Designed Outlet Concentration (mg/Nm^3)			
					(m)	(m)	° C	(m/sec)	m^3/hr	Dust	SO_2	NO_x	CO
Sinter Plant (1)	M/C Stack	104	1	ESP	50	2.5 to 3	80 to 150	11	300000	< 100	-	-	-
	Cooler Stack	104A	1	ESP	40	2.5 to 3	80 to 150	9.2	234000	< 100	-	-	-
Sinter Plant (2)	M/C Stack	105	1	ESP	60	3 to 4	80 to 150	11	480000	< 100	-	-	-
	Cooler Stack	105 A	1	ESP	40	3 to 4	80 to 150	8.2	374000	< 100	-	-	-
Coke Oven	Coke oven stack (01)	101	1	Not required	70	4.1	900 - 1100	3.26	155000	< 50	< 250	<120	-
	Coke oven stack (02)	102	1	Not required	70	4.1	900 - 1100	3.26	155000	< 50	< 250	<120	-
	Coke oven stack (03)	103	1	Not required	70	4.1	900 - 1100	3.26	155000	< 50	< 250	<120	-
	WHRB 01	101A	1	Desulphurization	40	2	120-200	13.7	155000	< 50	< 100	<120	-
	WHRB 02	102 A	1	Desulphurization	40	2	120-200	13.7	155000	< 50	< 100	<120	-
	WHRB 03	103 A	1	Desulphurization	40	2	120-200	13.7	155000	< 50	< 100	<120	-
Blast Furnace (02)	Flare Stack	117	1	Dust catcher, Venturi, Scrubber	45	0.92	250	18	45000	< 150	-	-	-
	Stove Chimney	115	1	-	60	3.6	250-300	1.22	45,000	< 150	< 200	<150	1% (max)
	Slag Granulation Stack	108	1	-	35	1.7	71	2.14	17500	< 150	-	-	-

Process Units	Sub Units	Stack Code	No. of Stack	Air Pollution Control Equipment	Height of Stack	Dia. of Stack	Temp. of Gas	Velocity of Gas	Volumetric flow rate	Designed Outlet Concentration (mg/Nm^3)			
					(m)	(m)	º C	(m/sec)	m^3/hr	Dust	SO_2	NO_x	CO
Power plant	BFG fired Power Plant Stack (9 MW)	107	1	Not required	62	2.05	130 to 150	16	179856	< 150	< 200	-	0.03
SMS (02)	SMS Main Stack	113	1	Dust Catcher, Scrubber, Venturi	70	1.4	65	12	70,000	<150	-	-	-
	Vacuum Degasser Boiler Stack	118	1	Fuel/air rate control system (step less module)	60	0.9	Min: 120 Max: 200	12	27500	< 150	< 500	-	-
	Desulphurization stack (90 T)	106	1	Bag filter system	40	1.8	120	9	80000	< 150	-	-	-
Rolling Mill (01)	Rolling Mill Stack	108	1	Fuel/air rate control system	80	2	220	7	80000	< 100	< 500	<450	5% of O_2
Rolling Mill (02)	Rolling Mill Stack	110	1	Fuel/air rate control system	60	1.2	220	7	30000	< 100	< 500	<450	5% of O_2
Rolling Mill (03)	Rolling Mill Stack	111	1	Fuel/air rate control system	60	1.2	220	7	30000	< 100	< 500	<450	5% of O_2
Lime/Dolo calcination plant (300 TPD)	Lime / Dolo plant stack	120	1	Bag filter dedusting	50	1	60 to 150	18	52000	< 150	-	-	-
Lime/Dolo calcination Plant (100 TPD)	Lime / Dolo plant stack	120 A	1	Bag filter dedusting	40	0.6	60 to 150	18	18000	< 150	-	-	-

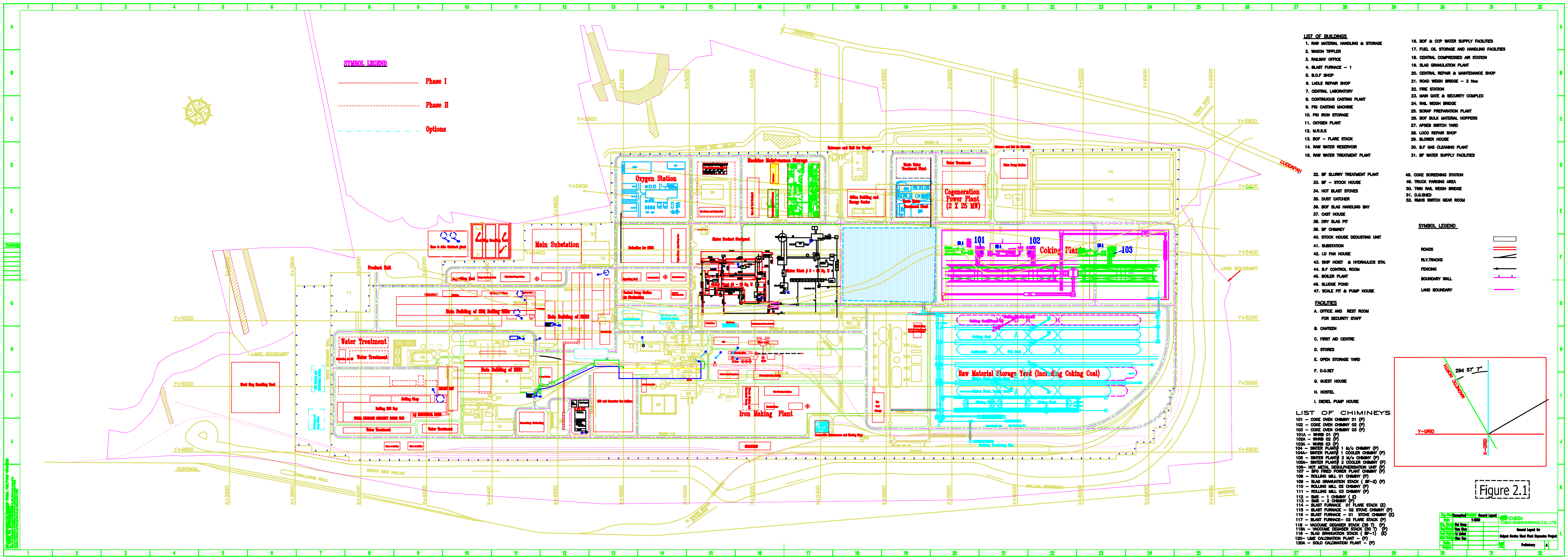
Table 2.16: Details of Manpower Requirement

SNo	Particulars	Manpower		
		Pre Expansion	Expansion	Post Expansion
1	Executive Administration	40	23	63
2	Executive Technical	122	78	200
3	Graduate Engineer Trainees	41	317	358
4	Non Executives Technical	85	497	582
5	Non Executives Administration	65	25	90
	Total	**353**	**940**	**1293**

Construction of proposed expansion will be completed within 36 months with a peak manpower force of 1000 personal per day.

2.9 Project Cost

Capital cost of the project is Rs. 1924 Crores.



SYMBOL LEGEND
Phase I
Phase II
Options
Oxygen Station
Machine Maintenance Storage
Main Substation
Cogeneration Power Plant (2 X 25 MW)
Coking Plant
101
102
103
Water Treatment
Raw Material Storage Yard (Including Coking Coal)
Iron Making Plant
CUDDAPAH
LAND BOUNDARY
LIST OF BUILDINGS
1. RAW MATERIAL HANDLING & STORAGE
2. WAGON TIPPLER
3. RAILWAY OFFICE
4. BLAST FURNACE – 1
5. B.O.F SHOP
6. LADLE REPAIR SHOP
7. CENTRAL LABORATORY
8. CONTINUOUS CASTING PLANT
9. PIG CASTING MACHINE
10. PIG IRON STORAGE
11. OXYGEN PLANT
12. M.R.S.S
13. BOF – FLARE STACK
14. RAW WATER RESERVOIR
15. RAW WATER TREATMENT PLANT
16. BOF & CCP WATER SUPPLY FACILITIES
17. FUEL OIL STORAGE AND HANDLING FACILITIES
18. CENTRAL COMPRESSED AIR STATION
19. SLAG GRANULATION PLANT
20. CENTRAL REPAIR & MAINTENANCE SHOP
21. ROAD WEIGH BRIDGE – 2 Nos
22. FIRE STATION
23. MAIN GATE & SECURITY COMPLEX
24. RAIL WEIGH BRIDGE
25. SCRAP PREPARATION PLANT
26. BOF BULK MATERIAL HOPPERS
27. APSEB SWITCH YARD
28. LOCO REPAIR SHOP
29. BLOWER HOUSE
30. B.F GAS CLEANING PLANT
31. BF WATER SUPPLY FACILITIES
32. BF SLURRY TREATMENT PLANT
33. BF – STOCK HOUSE
34. HOT BLAST STOVES
35. DUST CATCHER
36. BOF SLAG HANDLING BAY
37. CAST HOUSE
38. DRY SLAG PIT
39. BF CHIMNEY
40. STOCK HOUSE DEDUSTING UNIT
41. SUBSTATION
42. I.D FAN HOUSE
43. SKIP HOIST & HYDRAULICS STN.
44. B.F CONTROL ROOM
45. BOILER PLANT
46. SLUDGE POND
47. SCALE PIT & PUMP HOUSE
48. COKE SCREENING STATION
49. TRUCK PARKING AREA
50. TWIN RAIL WEIGH BRIDGE
51. D.G.SHED
52. RMHS SWITCH GEAR ROOM
SYMBOL LEGEND
ROADS
RLY.TRACKS
FENCING
BOUNDARY WALL
LAND BOUNDARY
FACILITIES
A. OFFICE AND REST ROOM FOR SECURITY STAFF
B. CANTEEN
C. FIRST AID CENTRE
D. STORES
E. OPEN STORAGE YARD
F. D.G.SET
G. GUEST HOUSE
H. HOSTEL
I. DIESEL PUMP HOUSE
LIST OF CHIMINEYS
101 – COKE OVEN CHIMINY 01 (P)
102 – COKE OVEN CHIMINY 02 (P)
103 – COKE OVEN CHIMINY 03 (P)
101A – WHRB 01 (P)
102A – WHRB 02 (P)
103A – WHRB 03 (P)
104 – SINTER PLANT# 1 M/c CHIMINY (P)
104A– SINTER PLANT# 1 COOLER CHIMINY (P)
105 – SINTER PLANT# 2 M/c CHIMINY (P)
105A– SINTER PLANT# 2 COOLER CHIMINY (P)
106– HOT METAL DESULPHERISATION UNIT (P)
107 – BFG FIRED POWER PLANT CHIMINY (P)
108 – ROLLING MILL 01 CHIMINY (P)
109 – SLAG GRANUATION STACK (BF–2) (P)
110 – ROLLING MILL 02 CHIMINY (P)
111 – ROLLING MILL 03 CHIMINY (P)
112 – SMS – 1 CHIMINY (E)
113 – SMS – 2 CHIMINY (P)
114 – BLAST FURNACE 01 FLARE STACK (E)
115 – BLAST FURNACE – 02 STOVE CHIMINY (P)
116 – BLAST FURNACE – 01 STOVE CHIMINY (E)
117 – BLAST FURNACE– 02 FLARE STACK (P)
118 – VACCUME DEGASER STACK (35 T) (P)
118A – VACCUME DEGASER STACK (50 T) (P)
119 – SLAG GRANUATION STACK (BF–1) (E)
120– LIME CALCINATION PLANT – (P)
120A – DOLO CALCINATION PLANT – (P)
MAGNETIC NORTH
29d 57' 7"
Y–GRID
X–GRID
Conceptual
Dai Hong
Yuan Chao
Li Linhui
Mao Can

Figure 2.1

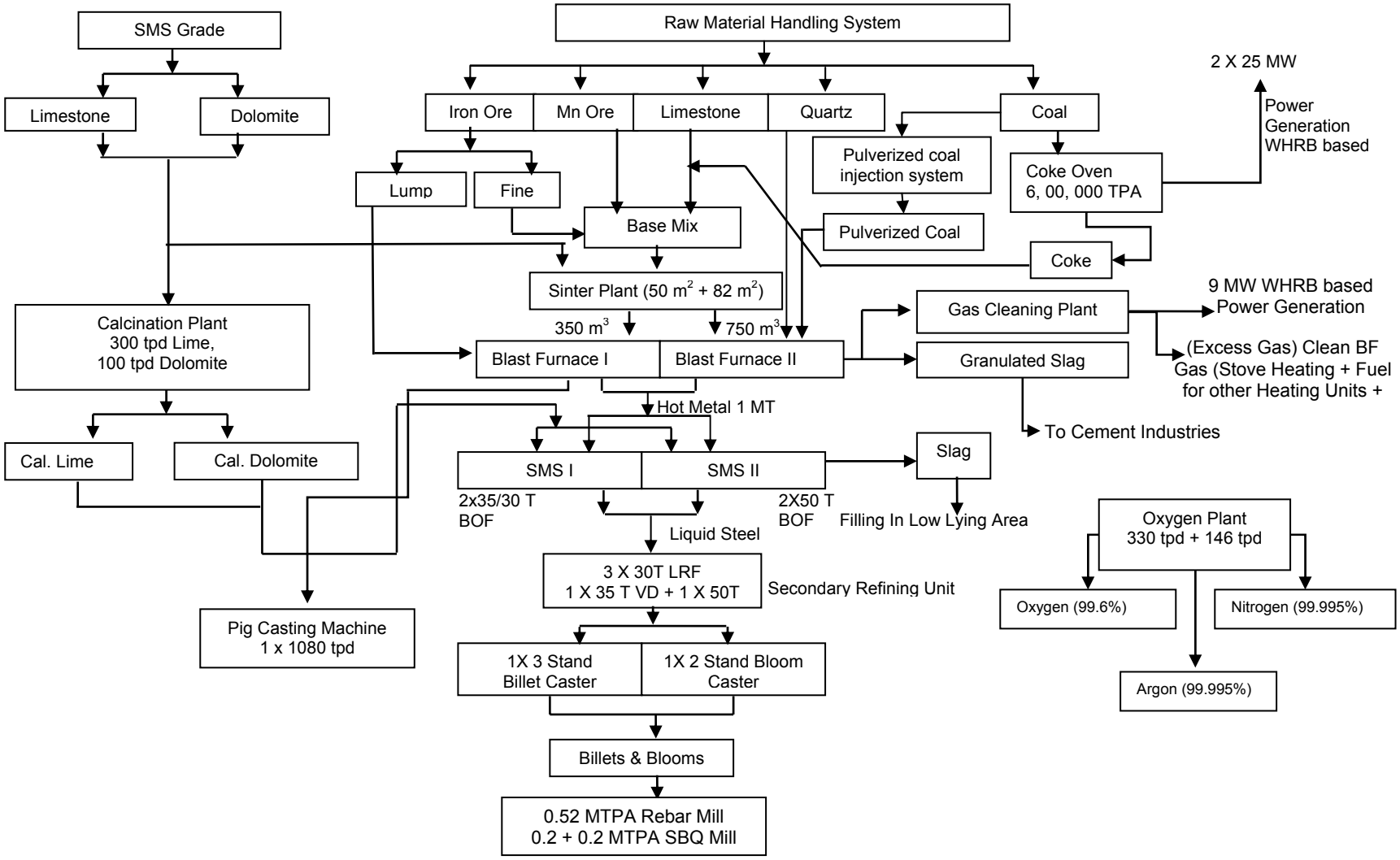


Figure 2.2: Manufacturing process flow diagram

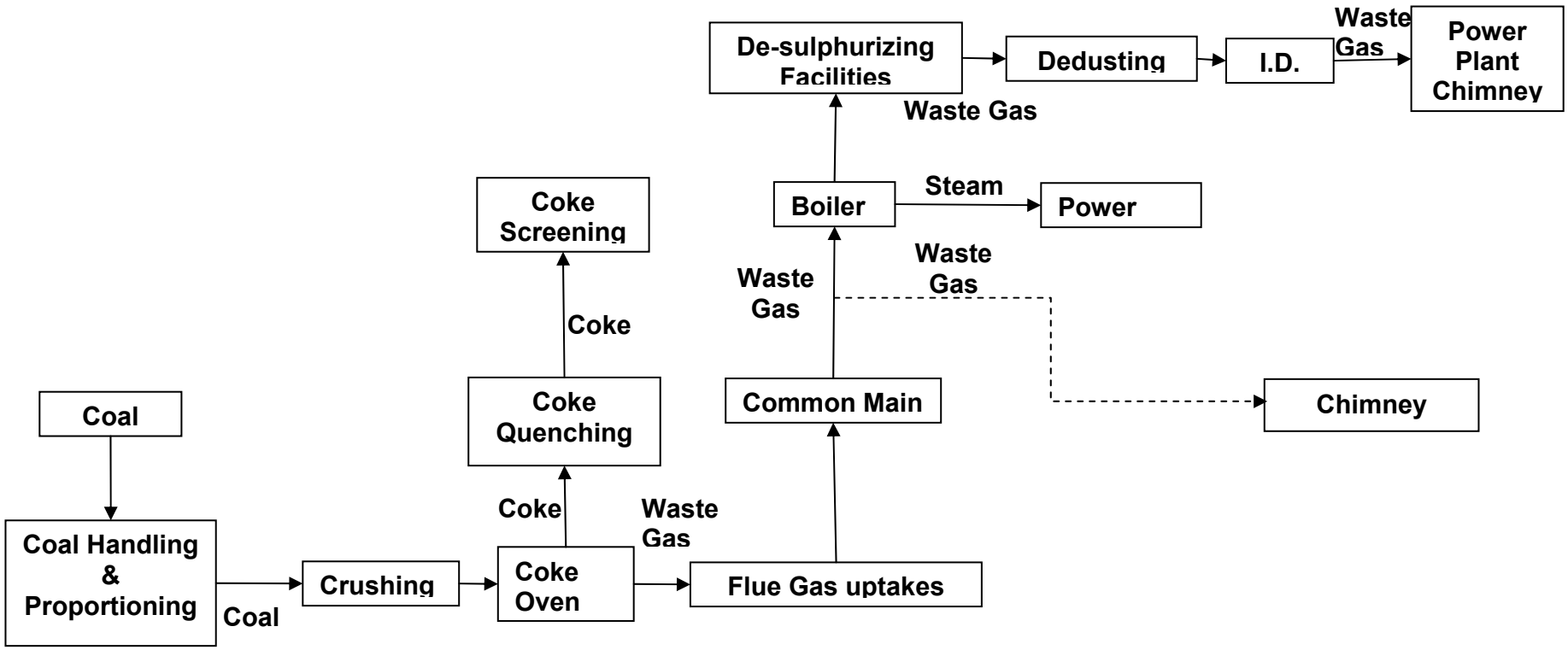


Figure 2.2 a: Manufacturing process flow diagram (Coke Oven Plant)

Annexure 2.1

1.0

GOVERNMENT OF ANDHRA PRADESH
A B S T R A C T

Industries & Commerce Department – Permission for drawal of sub-surface water from Pennar River bed by M/s. SJK Steel Corporation Limited, for their proposed integrated steel project in Tadipatri in Anantapur district – Orders – Issued.

INDUSTRIES AND COMMERCE (IP) DEPARTMENT
G.O.Ms.No. 64

Dated: 6 – 1 – 97
Read the following:

1. From M/s. SJK Steel Corporation Limited, Hyderabad, letter dated: 19.9.96
2. From M/s. SJK Steel Corporation Limited Letter No. SJKS/T 002/D.95, dated: 22.9.95
3. From the Directors, Ground Water Department, Letter No. 17134/Hg5/95, dated: 16.8.96.
4. From M/s. SJK Steel Corporation Limited, Letter dated:6.11.96.
5. Minutes of the meeting of the State Investment Promotion Board and State Investment Promotion Committee held on 12.12.96 and 18.12.96.

...

O R D E R :

M/s. SJK Steel Corporation Limited, Hyderabad, in the letter 1st read above has proposed to set up integrated Steel Project in Tadipatri in Anantapur District with an investment of Rs. 613.00 crores. Therefore, the company has requested the Government to permit them to draw water to the extent of 2.3 MGD from the Pennar River bed through infiltration wells for their proposed steel plant.

2. In pursuance of the decision taken at the meeting of the State Investment Promotion Board held on 18.12.96 and also based on the report sent by the State Ground Water Department in the reference 3rd read above, Government permit M/s. SJK Steel Corporation Limited, Hyderabad for drawal of sub-surface water through infiltration wells for a period of 240 days in a year between July to February for their proposed M/s. SJK Steels Limited, in Tadipatri in Anantapur District, subject to the conditions laid down hereunder :

i) The drawal of ground water to the extent of 2.3 MGD from the Pennar River bed shall be permitted only during non-summer months from July to February (8 months) i.e., 240 days in a year. In order to tap this quantity of ground water the industry should construct 8 Nos. of shallow tube wells of 10" and in addition 4 Nos. reserve tube wells of 12.0 m depth each at site/YES No. 1, 2, 3, 9, 13, 15, 17, 19, 20, 21, 22 & 25 respectively each capable of yielding about 3.2 lakh gallons day by pumping for 16 hours a day at the rate of 20,000 gph at the rate recommended by the State Ground Water Department.

Contd...2.

ii) Out of total requirement of water to the tune of 4.15 MCM about 2.73 MCM should be met by the Industry through ground water.

iii) The Industry is required to establish observation wells and monitor the water levels and quality regularly at their cost in and around the tube wells proposed to be constructed and submit annual reports to State Ground Water Department.

iv) Yield test with piezometers should be conducted on all the wells to be constructed before commissioning the proposed supply scheme and a report alongwith the test data is to be submitted to the Ground Water Department.

v) A water meter should be installed by the company at their own cost to measure the water consumed and the consumption details should be made available to such Authorities as may be declared by the Government.

vi) Continuous monitoring of the ground water regime has to be taken up by the firm to ensure that the proposed pumpage would not have any adverse impact on the existing ground water users;

vii) The pumping should be done from a well constructed with the necessary permission for location of pumping unit;

viii) No field bodhi or pipe line shall be taken through or along Government land without prior approval of the Government.

ix) The prior concurrence of the Roads and Buildings Department, or Panchayat Department should be obtained by the company for laying of pipe line crossing the roads etc.

x) The entire cost of the construction of the pipe lines, excavation etc. should be borne by M/s. SJK Steel Corporation Limited. The company shall have to pay the water rate (Royalty) as fixed by the Government from time to time.

xi) Only the recommended quantity of ground water should be tapped from the recommended structures for recommended period. The purpose of use should not change at any point of time;

xii) The company should make their own arrangement for supplementation of water during meager flows in the Pennar River;

xiii) The proposed plant should not cause any advance environmental impact from the geological or hydro-geological point of view.

xiv) The company should make their own arrangements to dispose of the industrial affluents after treatment.

xv) The affluents must be treated properly (to the level of agriculture purposes) and should be free from all taxic materials, colour, odour etc., before letting it out so that the ground water/surface water are not affected/polluted. The company should not let out any affluents outside their premises. The provision for affluent treatment should be made to the satisfaction of Andhra Pradesh Pollution Control Board, and clearance from the A.P.P.C. should be obtained.

xvi) At any time in future, if in the opinion of the Government, it is felt that the proposed ground water pumpage by the above industry is against the public interest, the Government may initiate action to regulate/stop the extraction of ground water;

xvii) Violation of any of the conditions mentioned above shall entail the cancellation of the permission granted for drawal of water from the pennar river without any notice.

Contd ..3

xviii) The Irrigation department is in no way responsible for non-availability of water due to any reasons which are beyond the control of the department; and

xix) Any other conditions laid down by the Irrigation Department/Government from time to time shall be followed;

3. M/s. SIK Steel Corporation Limited, Hyderabad and the B.H.S. Inter-State Water Resources are directed to enter into an agreement on the above conditions for utilization of water from Government source.

4. This order issues with the concurrence of Irrigation and C.A.D. (Ir.III) Department vide their U.O.No. 45179/Ir.III.2/95, dated 6-1-96.

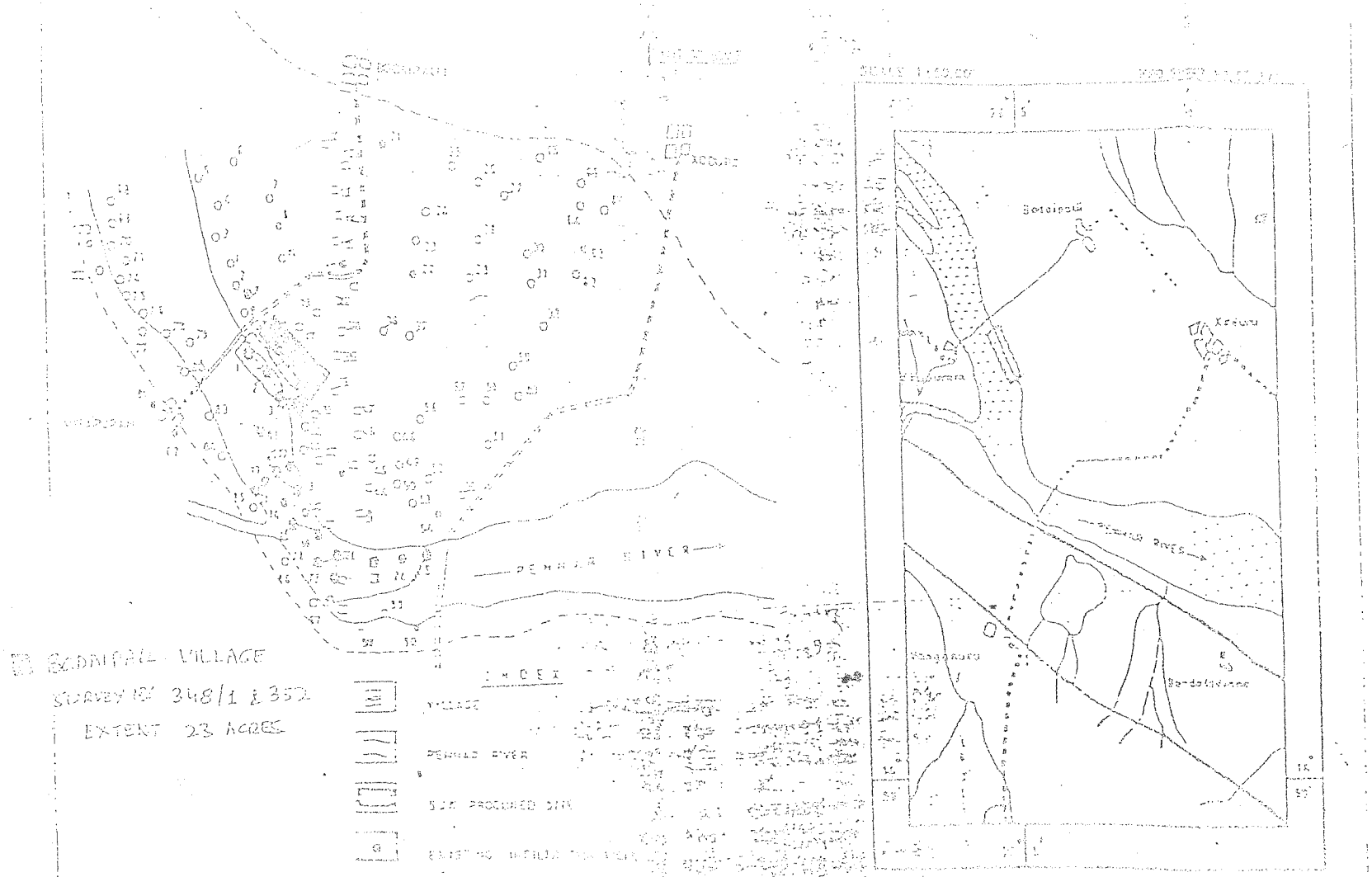
(BY ORDER AND IN THE NAME OF THE GOVERNMENT OF ANDHRA PRADESH)

P.C. PARAKH, IAS.,
Principal Secretary to Government and
Commissioner for Industrial Promotion.

To
M/s. SIK Steel Corporation Limited, 3-A, Vengalarao Nagar, Hyderabad.
The Engineer-in-Chief, Inter-State Water Resources, Hyderabad.
The Chief Engineer, Major Irrigation, Hyderabad.
The Chief Engineer, Minor Irrigation, Hyderabad.
The Chief Engineer, Medium Irrigation, Hyderabad.
The Commissioner of Industries, Hyderabad.
The Director, Ground Water Department, Hyderabad.
The District Collector, Anantapur.
The Irrigation and Command Area Development (Ir.III) Dept.
The Superintendent Engineer, I.C.Circle, Anantapur.
The Revenue Divisional Officer, Anantapur.
The P.S to Secretary to Govt., MA&UD Department.
The P.S. to Prl.Secretary to Govt., Energy Department.
The P.S. to Prl.Secretary to Govt., EFS Department.
The P.S. to Prl. Secretary to Govt., Health Dept.,
The Secretary to Chief Minister.
The P.S. to Chief Minister.
The P.S. to Minister (Major Industries)
The Private Secretaries to Ministers (Major, Medium & Minor Irgn.)
The P.S. to Chief Secretary.
The P.S. to Prl. Secretary, Industries & Commerce Dept.,
The P.S. to Secretary, Industries & Commerce Dept.
The Deputy Director, Ground Water Department, Anantapur.

// forwarded by order //

-3- Sd/- W.Gopal krishna
Section Officer



B EKDANDAL VILLAGE
SURVEY NO 348/1 & 352
EXTENT 23 ACRES

From:- SJK Steel Plant, Tadipatri

08554-240998

20

(1 of 3)

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Industries & Commerce Department - Permission for drawal of Ground water from Pennar River Alluvium M/s SJK Steel Corporation Limited for the proposed integrated steel projects in Tadipatri in Ananthapur District - Orders - Issued.

INDUSTRIES & COMMERCE (IP) DEPARTMENT

G.O.Rt.No.281 Dated: 28-04-1999.

Read the following:-

1. G.O.Ms.No.4, Industries & Commerce (IP) Department, dated 6-1-1997.
2. From M/s SJK Steel Corporation Limited, dt.1-7-98.
3. Minutes of the meeting of SIPC held on 13-1-99.

-0-

In the reference 2nd read above, the Managing Director, SJK Steel Corporation Limited has stated that due to delays in execution of the project arising out of late sanction and release of funds by institutions and Banks the schedule of implementation of their project had been revised. It is now proposed to commence commercial production by January 99 and the requirements of water would arise from that month onwards. In terms of G.O.Ms.No.4, dated 6-1-97, they are precluded to draw the actual requirements of water at 2.5 MGD from February to June. Thus due to their inability to draw water during the said period to the extent of actual requirements of their project, the project would be a non-starter.

2. Finally the Managing Director, SJK Steel Corporation Limited has requested the Government to permit them to draw 2.5 MGD water from Pennar River bed from the month of Jan. 99 onwards without any restriction for the months from Febuary to June.

3. In pursuance of the decision taken at the meeting of State Investment Promotion Committee 13-1-1999 and also based on the report of the Director, Ground Water Department, Government after careful examination hereby permit the M/s SJK Steel Corporation Limited to draw Ground water to the extent of 2.5 MGD from the Pennar River Alluvium through infiltration wells from the month of January 1999 onwards for their proposed M/s SJK Steel Corporation Limited, Tadipatri, Ananthapur subject to the terms and conditions as stipulated in G.O.Ms.No.4, Industries & Commerce (IP) Department, dated 6-1-1997 except the condition at para 2(ii) alongwith the following new conditions.

1. the permission is given to draw ground water for the remaining period of the year i.e. March to June also @ 2.5 MGD from the Pennar River alluvium near Bodai-pally(V) from the 28 acres of land through 8 Tube/ infiltoration wells as per the pattern of pumping from the 8 recommended wells stated by ground water Department in Statement appended.

SJK STEEL CORPORATION LTD.
14 MAY 1999
RECEIVED
INWARD No: 4607

P.T.O.

Original to
SF. [illegible]
[illegible] 14.5.99

Shri P Pullaiah [illegible]

2. the drawals in the above period (March to June) are permitted subject to

a) normal or better rainfall conditions;

b) normal or better flow condition in the river pennar;

c) extraction of ground water from the recommended area only;

d) periodic review by Ground water Department.

4. M/s SJK Steel Corporation Limited, Hyderabad and the Engineer-in-Chief, Inter-state water Resources are directed to enter into an agreement on the above condition for utilisation of water from Government source.

5. This order issues with the concurrence of Irrigation and Command Area Development Department, vide their U.O.No. 10415/CC &IWS/99-11, dated 19-3-1999.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

DR. SHEELA BHIDE,
PRINCIPAL SECRETARY TO GOVERNMENT

To
M/s SJK Steel Corporation Limited,
5-A, Vengalarao Nagar, Hyderabad.
The Chief Engineer, Inter-State Water Resources, Hyderabad.
The Major Irrigation, Hyderabad.
The Chief Engineer, Minor Irrigation, Hyderabad.
The Chief Engineer, Medium Irrigation, Hyderabad.
The Commissioner of Industries, Hyderabad.
The Director, Ground Water Department, Hyderabad.
The District Collector, Anantapur.
The Revenue Development Officer, Anantapur.
The P.S. to Secretary to Govt., MA & UD Dept.
The P.S. to Prl. Secretary to Govt. Energy Department.
The P.S. to Prl. Secretary to Govt. Transport Roads & Building Department.
The P.S. to Prl. Secretary to Govt. Panchayat Raj & Rurual Development Department.
The Secretary to Chief Minister.
The P.S. to Chief Minister.
The P.S. to Minister (MI).
ALL Pvt. Secretaries to the Ministers.
(Major, Medium & Minor Irrigation)
The P.S. to Chief Secretary.
The P. S. to Prl. Secretary to Govt. I&C Dept.(P)
The P. S. to Prl. Secretary to Govt.(B), I&C Dept.
The Dy. Director, Ground Water Department, Anantapur.
The Irrigation & Command Area Development(ACAD/WS) Dept.
The Superintendent Engineer, I.C. Circle, Anantapur.

//forwarded by order//

Section Officer

Copy of:

STATEMENT SHOWING THE PATTERN OF PUMPING FROM THE RECOMMENDED WELLS FOR SJK STEEL CORPORATION LIMITED, BODIAPALLY VILLAGE, ANATHAPUR DISTRICT

Well No.	Discharge cum/hr.	Hours of Pumping per day.
3	90.90	15
5	90.90	15
7	90.90	15
8	96.60	15
9	105.60	15
12	107.00	15
13	110.00	15

DR. SHEELA BHIDE
PRINCIPAL SECRETARY TO GOVERNMENT

//true copy//

Section Officer

3.0

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Industrial Water Supply – Permission to draw 5 MGD (292.4 Mcft annually) of water from Gandikota Reservoir by M/s SJK Steels Limited for their expansion plant at Jambulapadu Village in Tadipatri Taluk of Ananthapur District – Accorded – Orders – Issued

IRRIGATION & CAD (PW:REFORMS) DEPARTMENT

G.O.Ms.No.277

Date: 14-12-2007
Read the following:-

1. G.O.Ms.No.4, Industries & Commerce (IP) Department dated 6.1.1997
2. G.O.Rt.No.281, Industries & Commerce Department dated 28.4.1999
3. From the Chief Executive Officer, M/s SJK Steel Plant Limited Hyderabad Letter dated 12.1.2007
4. From the Chief Engineer (Projects) Irrigation Kadapa Letter.No.CE(P)/Irrgn.KDP/TS3/5421/2006, dated 15.2.2007
5. From the Commissioner of Industries Hyderabad Letter.No.15-1-5-412-1056-ID, Dated 24.8.2007

ORDER:-

The Chief Engineer (Projects) Irrigation Kadapa in his letter fourth read above has informed that M/s SJK Steels Plant Limited, a manufacturing unit of Steel, situated at Jambulapadu Village in Tadipatri Taluk of Ananthapur District had proposed to expand the capacity of their existing plant from 0.3 MT per year to 2 M.T. per year; and further stated that the Chief Executive Officer of the above firm had requested to permit them to draw 5.0 MGD (292.4 Mcft annually) from Gandikota Reservoir as they are unable to extract that much of quantity from Ground Water Resources. It is reported that 1st phase of Gandikota Reservoir across Pennar River is formulated to impound flood water upto (+) 209.00m with a storage capacity about 16.5 TMC; and programmed to increase to about 26.5 TMC and that all these waters are proposed to be drawn from surplus water of river Krishna drawn from Srisailam foreshore. The Chief Engineer (P) Kadapa has recommended that the water that has been requisitioned is very minor quantity and there would be no difficulty to spare from the storage of Gandikota Reservoir.

2. The Commissioner of Industries in the reference fifth read above has reported that the Industry is drawing water from Pennar River bed through bore wells and open well as per the orders issued in the references first and second read above and the water is not sufficient for their expansion and sought permission to draw 5.0 MGD additionally for their expansion project. He has quoted the Hon'ble High Court order dated 7.12.2006 on drawing of water from Penna River bed and the Director Ground Water Department was directed to keep a constant vigil on the drawal of water from Pennar River and see that if there is any scarcity for drinking water, drawal of water from Pennar river by the Industry should be stopped forthwith.

3. Government after careful consideration hereby grant permission to M/s SJK Steels Plant Limited to draw 5.0 MGD (292.4 Mcft annually) of water from Gandikota Reservoir for their expansion unit at Jambulapadu Village in Tadipatri Taluk of Ananthapur District subject to payment of water charges as per G.O.Ms.No.39, I&CAD dated 2.4.2002 and also subject to usual terms and conditions.

PTO

To R.K
File as it is important paper
Send one copy to TKB

old ... 85,000 m3 x 2
Proposed new -8- 11,90,000 m3

4. The Director Ground Water Department Hyderabad is directed to keep a constant vigil on the drawal of water from Pennar River by the industry and if there is any scarcity for drinking water, drawal of water from Pennar River by the Industry should be stopped forthwith

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

RAJIV RANJAN MISHRA
SECRETARY TO GOVERNMENT

To
The Chief Engineer (Projects) Irrigation, Kadapa
Copy to:-
The District Collector, Ananthapur District
The Commissioner of Industries, Chirag-ali-lane, Hyderabad.
The Director of Ground Water Department, BRK Buildings, Hyderabad
The Deputy Director, Ground Water Department Ananthapur.
The Industries & Commerce Department
PS to Minister (M&MI)
PS to Secretary (RRM)
Stock file

//Forwarded by Order//

Section Officer

Annexure 2.2

Agreement for purchase of Granulated Blast Furnace Slag

Penna Cement Industries Limited
Plot No. 703, Siddipet Colony, Road No. 3, Banjara Hills, Hyderabad - 500 034.
Phones : 3353946, 3353948 Fax : 040 - 3353951

PCIL:COM:MKTG:SJK: October 4, 1999,

SJK STEEL CORPORATION
NO. 5A, VENGAL RAO NAGAR
HYDERABAD - 500 038.

FAX NO. : 3713616

Kind Attn: Shri. M.S.R.Durga Prasad,
Sr. General Manager (Commercial)

Dear Sir,

SUB : PURCHASE OF BLAST FURNACE SLAG.
REF : OUR DISCUSSION ON 20TH SEPT., 1999

With reference to the above discussions, we are pleased to convey our willingness, in principle, to purchase the entire quantity of granulated slag of 1,10,000 MT i.e.,100% of granulated slag being produced by you every year. The Characteristics of Slag are as given below :

Chemical Composition

CaO	= 36.36%
SiO2	= 33.07%
MgO	= 10.94%
Al2O3	= 17.07%
FeO	= 0.63%
MnO	= 0.37%
S	= 0.76%

Physical Properties

Size	= 0 - 6 mm
Moisture	= 12 - 15%
Bulk Density	= 1.8 t/m3

Being in close proximity to each other, we are looking forward a long term cooperation with each other.

Thanking you,

Yours faithfully,
for PENNA CEMENT INDUSTRIES LIMITED

M. RAVINDER REDDY
CHIEF OF MARKETING.

Works : Talaricheruvu Village, Tadpatri Mandal, Ananthapur Dist., A.P. Phone : (08558) 73071, XXXX 74584