EXECUTIVE SUMMARY

1.0 INTRODUCTION

The national steel policy has set a target of 60 million tonne (MT) of steel production by 2012 . In line with this policy, Steel Authority of India Ltd (SAIL) has come up with a corporate plan for the expansion of their Bhilai Steel Plant (BSP) to enhance its steel production from 4.0 MTPA to 7.0 MTPA to meet the domestic demand for infrastructure growth of the country.

BSP a responsible corporate organization, is working in close association with all its stakeholders and has won the prestigious Prime Minister's Trophy for best integrated steel plant for seven times out of 13 times, so far. This is in recognition to its all round efforts in economic, environmental and social areas.

2.0 PROJECT DESCRIPTION

2.01 Location

The location of proposed expansion will be inside the existing plant boundary of Bhilai Steel Plant (BSP). BSP is located in Bhilai, District - Durg, Chattisgarh between North latitude $21^{o}11'$ to $21^{o}13'$ and East longitude $81^{o}22'$to $81^{o}24'$. Nearest National Highway is Great Eastern Road (NH-6).. Nearest big town is Durg at 15 km distance and nearest Airport is Raipur which is 45 km away.

2.02 The Modification-cum-Expansion Programme

The major plant facilities necessitating modernization ,modification, up-gradation, addition, deletion, technology up-gradation of different units / shops are presented in consolidated manner are shown below in **Table ES 1**

.

Table ES 1 : Facilities after modernization/modification cum expansion

Sl No	DESCRIPTION	Existing Units	7.0 MTPA Expansion
	SINTER PLANT COMPLEX		**Capacity : 9.235 MTPA**
1.	Sinter Plant-1	4 x 50 m^2	**Shall be put down in phased manner**
2.	Sinter Plant-2	3x75 m^2+ 1x 80 m^2	3x75 m^2+ 1x 80 m^2
3.	Sinter Plant-3	1x 320 m^2	1x 320 m^2(existing) +1x 320 m^2 **(new)**
	COKE OVEN COMPLEX		**Capacity : 3.94 MTPA**
4.	Battery 1	65 Oven 4.3 m tall	**Shall be put down in phased manner**
5.	Battery 2	65 Oven 4.3 m tall	65 Oven 4.3 m tall **(Rebuilding)**
6.	Battery 3 cold repair by 07	65 Oven 4.3 m tall	65 Oven 4.3 m tall
7.	Battery 4	65 Oven 4.3 m tall	65 Oven 4.3 m tall
8.	Battery 5 rebuilding Dec'07	65 Oven 4.3 m tall	65 Oven 4.3 m tall **(Rebuilding)**
9.	Battery 6 un-operative currently	65 Oven 4.3 m tall	65 Oven 4.3 m tall**(Rebuilding)**
10.	Battery 7	65 Oven 4.3 m tall	**Shall be put down in phased manner**
11.	Battery 8	65 Oven 4.3 m tall	
12.	Battery 9	67 Oven 7 m tall	67 Oven 7 m tall (Rebuilding)
13.	Battery 10	67 Oven 7 m tall	67 Oven 7 m tall
14.	Battery 11	67 Oven 7 m tall	67 Oven 7 m tall(**new battery**) with coke dry cooling and Associated facilities
	BLAST FURNACE COMPLEX		**Capacity : 7.5 MTPA**
15.	BF 1 with CDI	1033 m^3	**Shall be put down in phased manner**
16.	BF 2 with TIS	1033 m^3	
17.	BF 3 with TIS	1033 m^3	
18.	BF 4 **currently un-operative**	1719 m^3	1719 m^3 **(Relining)**

Sl No	DESCRIPTION	Existing Units	7.0 MTPA Expansion
19.	BF 5 with CDI	1719 m^3	1719 m^3 **(Relining)**
20.	BF 6 with CDI	1719 m^3	2000 m^3 **(Modernisation)**
21.	BF 7 with CDI	2000 m^3	2363 m^3 **(Modernisation)**
22.	BF 8 with CDI	-	4060 m^3 **(New)** with TRT
	STEEL MAKING & CASTING UNITS		
23.	SMS I	• 4x 500t Twin Hearth Furnace, Blooming and Billet mill	**Shall be put down in phased manner.**
24.	Blooming & Billet Mill	• 1150 mm BBM with 14 groups recuperative soaking pits • 1000/700/500 mm continuous Billet Mill with 12 stands	**Shall be put down in phased manner.**
25.	SMS II	• 3x 120 t BOF • 1X120t LF • 1x120t RH • 1x120t VD • 1x4 strand Bloom Caster(MC#5) • 3x1 strand Slab Casters(MC#1,2,3) • 1x4 strands combi caster (mc#4)	**Capacity : 3.0 MTPA** • 3x 120 t BOF • 2 x120t LF (**1 new**) • 2x120t RH (**1 new**) • 1x120t VD • Hot metal Desulphirisation **(New)** • (1existing + 1 replacement + I replacement at new location 1x1 slab caster #mc 6 **(new).**) • 1x4 strand Bloom Caster(**mc#5) modernise** • #mc 4 will be replaced by 1x4 strands Bloom-cum-Beam Blank Caster **(new)**
26.	SMS III **(New Unit)**	-	**Capacity : 4.0 MTPA** • 3x160 t BOF • 3x160 t LFs • 1x 160 t RH-OB • 1x vaccum tank degassing unit (Space provision) • 2x6 strand Billet Casters • 1x6 strand Bloom cum Billet Casters • 1x1 strand Thin Slab Caster
27.	Raw Materials Preparation Plant (RMP)	Matching the production facilities	Matching the production facilities
28.	Rail & Structural Mill	• 0.75 MTPA Rail & Structural	• 1.7 MTPA Rail & Structural with new universal beam rolling line
29.	Plate Mill	• 0.95 MTPA Finished Plate	1.42 MTPA Plate Mill (1.0 MTPA finished plates.0.36 MTPA Normalised Plates
30.	Hot Strip Mill **(New Unit)**	-	• 1.2 MTPA HR Coils (Continuos Hot strip finishing train of 6 stands)
31.	New Bar & Rod Mill **(New Unit)**	-	• 0.9 MTPA bars & rods
32.	Medium Merchant Mill	• 0.5 MTPA Merchant Product	• 0.6 MTPA Merchant Product
33.	Wire Rod Mill	• 0.5 MTPA Wire Rods	• 0.54 MTPA Wire Rods
34.	Lime & Dolo plant	RMP I RMPII • 2x 330 tpd Lime kiln • 1x 144 tpd dolo rotary kiln	RMP I **Shall be put down in phased manner.** **RMP-II** • 2x 330 tpd + 1 x 144 tpd Lime kiln • 1x 330 tpd kiln (**new**)

Sl No	DESCRIPTION	Existing Units	7.0 MTPA Expansion
			RMP III • 5x450 tpd lime and dolo kiln for SMS-III **(new)**
35.	Power and Blowing Station	6 x 150 tph boiler 3 x 12 MW	6 x 150 tph boiler 1 x 150 tph boiler (**new**) 1 x 12 MW + 3 x 15 MW 2 x 170 tph BF gas fired boiler (**new**) 1 x 15 MW (**new**)
36.	Oxygen Plant	3 x 550 tpd ASUs 3 x 5000 Nm3/hr ASUs	3 x 550 tpd + 1 x 650 tpd (**new**) 2 x 1250 tpd (**new**)
37.	Other Auxiliary facilities	Matching facilities	Matching facilities for achieving production

3.0 DESCRIPTION OF THE ENVIRORNMENT

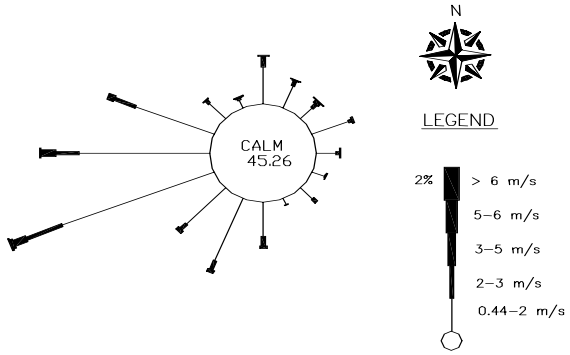
The existing environmental status is essential for assessing the likely environmental impacts of the proposed technological up gradations of project. Site monitoring has been carried in summer season for three months period from end March, 2005 to June 2005 to study the environmental attributes.

Meteorology:
The summary of meteorological observation carried out during the monitoring period is indicated in **Table ES2.**

Table ES2 : Summarised Meteorological data

Period	Wind Speed (km/hr)		Temperature (oC)		Relative Humidity (%)		Rainfall		Cloud Cover (OKTAS)
	Max.	Min.	Max.	Min.	Max.	Min.	Max (mm)	No. of Rainy Days	
April to June, 2005	28.0	0.0	47.0	10	92	5.5	34	7	0-8

The wind-rose diagrams of the area for 24 hours overall based on the monitored data is given in figure below :



WIND ROSE DIAGRAM (OVERALL)
SUMMER SEASON
Fig. 4.1a

Water Environment

Water samples have been collected once during monitoring period from total nine (9) locations in the study area .Three samples of surface water, three samples of Ground water and three samples of BSP effluent water were collected. The quality of surface water i.e River Kharun River, Sheonath , Maroda Raw Water tank conform to Class C i.e. the water can be used for drinking after conventional treatment followed by disinfection. BSP has three outlets namely Outlet-A consisting of effluents from mould foundry, OP-I, RMP-I, BF, SMS-1 & storm water ,Outlet-B consisting of effluents from MSDS-I, RTS, Diesel shed, & R&SM and Outlet-C consisting of effluents from COBPP, SP-I & SP-II etc. Treated water is discharged through these outlets. Effluent analysis results of Outlet-A, B and C indicate that all the Out fall effluent water is well within the norms of MOE & F .BSP is recycling most of the water from these outfalls. The results of analysis of ground water collected from village Jhurjhuri, Morid and Vaisali nagar have been compared with the drinking water quality standards specified in IS 10500. From the results it is obvious that the all the ground water quality parameters meet the prescribed norms.

Air Environment

The existing ambient air quality, in terms of Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur-dioxide (SO_2), Oxides of Nitrogen (NOx), Carbon Monoxide (CO), Lead (Pb) and Dust Fall has been measured through a planned field monitoring from 10 location all around the plant. The summary of results indicated in **Table ES 3**

Table ES 3 : Summarised Ambient air quality data

Sl. No.	Location	Air Quality Parameters (in μg/m^3)															
		SPM				RPM				SO_2				NO_x			
		Max	Min.	C98	Avg	Max	Min.	C98	Avg	Max	Min.	C98	Avg	Max	Min.	C98	Avg
A1	Bhilai Hotel	198	79	193	162	98	47	93	71	12	4	11	7.0	31	10	26	19
A2	Vill. Dundera	219	79	217	189	122	46	116	98	19	4	18	9.7	34	12	32	22
A3	Vill. Somani	225	77	224	194	137	37	130	105	23	4	18	9.7	34	12	31	22
A4	Vill. Charoda	218	88	216	192	113	57	107	95	19	4	17	8.3	37	16	36	27
A5	Vill. Hathkhoj	231	65	212	182	120	88	113	99	21	4	16	12	34	17	33	24
A6	CMS Maroda	291	112	242	185	190	61	168	102	23	5.4	22	13	29	10	28	17
A7	CISF HQ sec.3	246	86	242	177	133	52	125	94	28	4	24	14	38	10	37	20
A8	RSM	268	176	264	224	167	94	144	116	33	4	32	17	29	10	26	16
A9	OP-2	280	115	261	210	189	64	170	127	28	4.7	23	15	30	10	27	17
A10	CSEB	285	116	281	202	208	60	171	113	28	8	27	17	32	10	30	18
Reporting Limit of SO_2, is 4 μg/m^3 NO_x - 10 μg/m^3 ; CO – 1140 μg/m^3 (1 ppm)																	
	Norms of Industrial area			500	360			150	120			120	80			120	80

CO and Pb remained below detection limit (1140 and 0.003 μg/m^3 respectively) in all samples. The above results when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) for "Industrial Area" shows that the ambient air quality are within the stipulated limit of SPM,SO_2 and NOx. However, RPM Levels at some locations near the plants are slightly exceeding the norms as per industrial area occasionally, but average value of RPM is well within the norm.

To generate the data on actual emissions from the plant, stack monitoring was carried out on all major stacks having significant emission during the study period. The main pollutants monitored are SPM, SO2 and NOx. Most of the process stacks , the emissions are within stipulated norms .

Work zone air monitoring was carried out on all major shops. The main pollutants monitored are SPM and RSPM. The results are compared with Factories Act which stipulates norms for SPM as 10 mg/m^3 then it was observed that most of the area of BSP is well within the norms.

Soil

To assess the quality of soil in and around the existing plant area, soil samples were collected from five locations (Village Ruabandha, Maitribagh,Joratarai, Hathkhoj and Charoda) once for physico-chemical analysis. The analysis results indicate that soils are more or less in the region of neutral pH. Availability of Nitrogen was medium in all the samples Organic carbon content is high in all the samples. Overall the soil in the area is good for plant growth.

Noise Environment

Monitoring was carried out once during the monitoring season from Hatkhoj, Civic centre area, Sector V, Sector IX, Kursipar gate and Sector VIII. At each noise monitoring station, Leq. noise level has been recorded at hourly intervals for 24 hours. The summarized results of noise monitoring have been compared with the standard specified in Schedule III, Rule 3 of Environmental Protection Rules. The noise-monitoring results shows that at plant boundary within norms however in Township, some of the reading during day time has exceeded the norms due to commercial activities but all values at night are well within the norms.

Ecological Features

The study area includes urban areas, industrial areas and rural areas. There is no forest land, National Park ,Sanctuary in the study area. However extensive green belts have been developed by BSP in plant and townships, which account for most of the green cover in the area. Most of the natural vegetation consists of herbs, shrubs and isolated or small groups of trees. As regards fauna, due to lack of suitable habitat, diversity of animals is low and restricted to few common species. There is no endangered species in the area.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Impacts on various environmental attributes during construction as well as operation have been discussed. The impact assessments are focused on the proposed modification-cum-expansion and will broadly cover the following:

- Estimation of physical effects for all phases including construction and operation
- Estimation by type and quantity of expected contaminants i.e. residues, and emissions (air, water, noise, solid wastes) resulting from the operation of the proposed expansion and modification of existing unit.
- Assessment of the positive and negative impacts on land use, future development, cultural / historic resources, peoples, demographics, infrastructure, employment, income, education etc.
- Indirect impacts which may arise from proposed modification-cum-expansion of plant.

However, the anticipated environmental impacts of the proposed modification-cum-expansion are discussed below under the category (a) Impacts during construction and (b) Impacts during operation.

4.01 Impact During Construction

The proposed expansion will not acquire any new land and all of the construction activity will be limited within the existing BSP plant premises and in the already built up area, having all infrastructural facilities. As such no large-scale construction activity covering new large area and contributing considerable pollution are expected. Further, the impact of such activities will be temporary and will be restricted to the construction phase only.

4.02 Impact During Operation

Impact on Air Environment

Generally, operation of any production plant emits pollutants. Iron and Steel industries are also no exception to that. Once the modification-cum-expansion of existing steel plant to 7.0 MTPA completed and total plant gets operational, improvement in air quality is expected due to replacement of old and energy intensive units by state of art energy efficient units. BSP has contributed to socio-economic development of the region in the past. The positive trend of socio-economic growth will be continued.

Environmental releases due to expansion plant would be due to Emission to air, Wastewater discharges, Solid waste disposal and Noise level.

Table ES.4 : Total Plant Pollution Load (Kg/h)

S.NO	Scenario	PM	SO2	NOx
1	Existing	771.94	849.04	890.59
2	Reduction due to Phased out facilities	(-)271.45	(-)317.43	(-)309.48
3	Additional load due to proposed units	231.42	263.74	283.20
4	After completion of expansion at 2012	731.91	795.35	864.31
5	Net change	(-)40.03	(-)53.69	(-)26.28

The **Table ES.4** reveals that, there will is a considerable reduction in PM, SO2 and NOx emissions due to modernization and phasing out the old units. The reduction in PM,SO_2 and NOx levels due to phasing out of facilities like Sinter plant 1 and old design coke oven batteries no 1,7 & 8 , Refractory material plant I , Twin hearth furnaces of SMS I and soaking pit along with other older facilities

The following Table shows that the specific emission load of particulate matter, SO_2 and NOx will reduce substantially even though there is a increase in production.

Table ES.5 : Net Increase in Emission Load after Expansion In 2012

Sl NO	Description	Present	After Modernisation	% change
1	Steel production in MTPA	4.0	7.0	(+)75
2	No of major Stacks	46	44	(-)4.34
3	Particulate matter (kg/t of liquid steel)	1.69	0.91	(-)54
4	SO2 (kg/t of liquid steel)	1.86	0.99	(-)53
5	NOx (kg/t of liquid steel)	1.95	1.08	(-)55

The prediction of Ground level concentrations (GLC) of pollutants emitted from the stacks have been carried out using ISCST-3 Air Quality Simulation model released by USEPA. This model is basically a Gaussian dispersion model which considers multiple sources. The model accepts hourly meteorological data records to define the conditions of plume rise for each source and receptor combination for each hour of input meteorological data sequentially and calculates short term averages up to 24 hours. The impact has been predicted over a 10 km X 10 km area with the plant centre as 10000, 10000 m at the centre. GLC have been calculated at every 500 m grid point

Table ES.6 Predicted Maximum Values of Ground Level Concentrations at Various Grid Point

Pollutants	GLCs due to existing plant	GLCs after expansion and modernization i.e. 2012 scenario	Back ground monitored maximum average concentrations	Expected Net change in back ground concentrations
SPM	18.13(18.5;13.5)	11.86(12.0;11.0)	224	(-)6.27
SOx	19.37(19.5;9.5)	10.65(13.0;9.5)	17	(-) 8.72
NOx	18.44(18.5;13.5)	13.24(12.0;11.0)	27	(-) 5.2

- Concentrations are in µg/m3 and of 24 hours averaging time
- Values in the parenthesis indicate the coordinates of the grid points in Km direction of occurrence from the plant. (10000,10000) is the centre of the plant
- Plant boundary in north direction is 1.75 km, north east 2.54 km, in east 2.5 km south east 1.75 km, south 2.5 km, southwest 3.6 km, west 1.8 km and north west is 1.5 km from the centre of the plant

The above table reveals that, after modernization-cum-expansion of the plant, it is expected that there is an improvement in the back ground ambient concentrations in case of SPM, SO_2 and NOx. This improvement is mainly due to the phasing out the existing relatively polluting units, introducing better pollution control measures in the existing units and introducing new units with environmentally friendly technologies. It is observed that even after adding net change in GLCs with the back ground concentrations, the cumulative values are within the norms

Impact on Water Environment

The source of water for Bhilai and its township is Tandula Complex maintained by the State Govt.. There are two reservoirs at Bhilai Steel Plant. Maroda-II is the fresh water storage reservoir of capacity 27.4 MM3 and Maroda I is the cooling/recycling pond of capacity 9 MM3. Water is fed to the storage reservoir of the plant (Maroda-II) through the Tandula Irrigation Canal. The proposed modernization-cum-expansion of the 7.0 MTPA plant will require total 6862 m3/h water including the modified existing plant .

Present Water inflow from Tandula Canal is 4.2 TMCft/y Net Addl. Water requirement from WRD is 0.8 TMCft/y .The additional water requirement to BSP will also be drawn through existing Tandula canal system. Keeping in view of the higher water demand during agriculture season, the above water will be drawn during non agriculture season.

While selecting of the various water schemes major emphasis has been given towards the following.

a) Cascading the usage of water for minimising the water consumption.
b) Blending of re-circulating type cooling water system with Overall improvement in efficiency of the water cooling system
c) Moving towards zero discharge of waste water
d) Water from each of the three outfall will be recirculated in the plant system

BSP has been making continuous efforts to implement schemes to treat and recycle the steel plant effluents in order to conserve water. Various recycling schemes have been implemented by which the discharge of effluents through outlets have been considerably reduced. By adopting the various recycling schemes, the flows in combined outlets A ,B and C have been reduced to 100 m^3/h, 80 m^3/h and 800m^3/h respectively. In comparison to discharge flow quantity of 12700 m^3/h in 1987, the effluent discharge flow in 2006 was brought down under 1080 m3/h.. The results of sampling of combined effluent outlets of steel plant by BSP indicate that the quality of these effluents is within the permissible discharge limits.

To conserve water and to reduce water pollution BSP has taken up many schemes to treat effluent and domestic sewage and is being re-circulated for different uses as per the quality of water. Thus it can be concluded that the plant will be operated with minimal discharge/zero discharge concept, and the effluent load will be minimum.

Impacts on Land Environment

BSP will not take any additional land for expansion project as the proposed expansion will be inside the existing plant premises. BSP is presently generating 2801118 t/y (2005-06) of solid wastes and out which present utilization is 81.8% and 18.2% is dumping. After expansion of the plant it is expected that there will be increase in quantities and BSP will take all efforts to maximize the utilization. After expansion, it is expected that the utilization of solid waste increases to 98.0% and percentage of dumping will reduce to 2% from exiting percentage of dumping i.e. 18.2%.

Impacts on Noise Levels

At present the noise level at the plant boundary is within the norms .The noise level within the plant boundary is occupational noise levels and confined within shops. The level will be further minimised when the noise reaches the plant boundary and the nearest residential areas beyond the plant boundary, as elaborate green belt development is envisaged for attenuation of noise and fugitive emission. All the equipment in the steel plant will be designed/operated in such a way that the noise level shall not exceed 85 to 90 dB (A) as per the requirement of OSHA Standard (Occupational Safety and Health Association). In addition to it, green belt development around the shops will be done to minimise propagation of noise to nearby areas.

Impact on Ecological Features

Since the change in ambient air quality due to emissions from the proposed capacity expansion will be reduced further, vegetation in study area will not be damaged. As the plant will be designed in minimal discharge/Zero discharge concept, there will be no impact on the ecological components of surface water bodies in the area.

5.0 ENVIRONMENTAL MONITORING PROGRAMME

Various measures have been suggested for mitigation of impacts. These have to be implemented according to the suggestions and monitored regularly to prevent any lapse

Quarterly environmental audits as being carried out for existing plant will also be carried out for expansion plant to check for compliance with standards. Third party environmental audits will be carried out once very year.

The unit is taking all necessary steps to implement the measures suggested by Central Pollution Control Board (CPCB) in the Charter on Corporate Responsibility for Environmental Protection (CREP) for Integrated Iron and Steel Industry.

Laboratory Facilities

BSP has a well-equipped environmental control laboratory inside the plant premises which is ISO 14001 certified by third party auditors. The laboratory is carrying out all monitoring as specified in the Consent condition. All the personnel deployed in the laboratory have been given training to carry out necessary environmental monitoring as well analysis also.

BSP will carryout meteorological monitoring, AAQ, Water, Noise monitoring Effluents from all the three outfalls, Sewage treatment plant from Township and Plant for expansion plant also as being done for existing plant.

The suggestions given in the Environmental Management Plan (EMP) shall also be implemented by the EnMD by following an implementation schedule. EnMD is in regular touch with Chhattishgarh Environmental Conservation Board and send them quarterly progress report on Environment Management Plan.

6.0 ADDITIONAL STUDIES

6.1 Social Impact Assessment

Based on the overall results of the social impact assessment the following conclusions are drawn:

i) The project is not going to cause any damage to the existing agricultural situation. Instead, it is likely to provide the farmers with supplementary income.
ii) The project is going to foster the change in pattern of demand among people of the study area by way of increasing demand of non-food items in addition to food item.
iii) The project has strong positive effect on average consumption in the study area which is likely to lead to increase average income through multiplier effect.
iv) The project has very strong positive employment and income effects, because of increasing activity in ancillary industries and service sectors.
v) There is a possibility increase in industrialisation in the vicinity of BSP. This is likely to bring more skill diversification among local people.
vi) The project has positive impact on educational status of people of the study area.
vii) The project has significant positive impact on community development activities of BSP which are likely to bring handful of benefits to the people of the study area.
viii) Overall peoples' perception on the project is good.

6.2 Disaster Management Plan

BSP has already made 29 nos of disaster management plan for its different shops. The same will be followed for the new units also. BSP also renders help to District Govt authorities by offering fire tenders, hospital facilities etc in case of eventualities in surroundings.

7.0 PROJECT BENEFITS

Improvement in the Physical Infrastructure

Road:

Improvement and extension of the existing network is, essential to develop remote areas, better connection between the economic centers of state, and also cross-border transport and for personal mobility of the masses. As 3 -5 % of raw materials and products are dispatched through roads, road development and growth of transport sector is inevitable.

Rail Network:

As 95-97% of raw materials and products are transported through Indian Railways, the BSP expansion projects will promote Railways network and its growth.

Improvement in the Social Infrastructure

Apart from various initiatives undertaken in the field of routine peripheral development, sports, arts, culture, health and education services, BSP will launch following new programme for the improvement of social infrastructure.

- Procurement of well-equipped ambulance / mobile dispensary
- Installation of Sickle cell / thalassemia unit

- Construction of indoor sports complex
- Adoption of 20 tribal children every year for free education , lodging and boarding
- Adoption and upkeep of two historical monuments / tourist spots in chhattisgarh
- Beautification of important places / squares at state capital
- Organising district level competitions in quiz / archery / sports events for physically challenged as a part of "durg distt. centenary celebrations"
- Adoption of one village as steel village with all civic amenities
- Workshops on drawing & painting, folk dance and music, ergonomics, counselling
- Major sports events in rural/ tribal areas
- Roadside plantation (State highways) stretching over 30 km.
- Sports for physically challenged
- Physically handicapped dependants will be extended opportunities for self-employment
- Free intra ocular lens transplantation at BSP hospital
- Revival of folk art
- Ancillary development
- AIDS awareness
- Assistance during Disaster Management
- Free education to SC/ST students
- Vocational training

Employment Potential

It generates employment both directly and also indirectly due to development of downstream industries. During the construction period, the project is going to create substantial employment and income. A large portion of this is likely to trickle down to the local people. Besides this, some persons from the study area may get employment on permanent basis for actual operation of the plant in the form of skilled or semi-skilled, or unskilled labour. It is estimated that 5900 new jobs will be created after modernization. Thus, substantial amount of employment and income are expected to be generated for the local people. Hence, it can be ascertained that the project is going to have significant employment and income effects.

In the case of indirect employment also, the effect is quite strong and widespread. Besides direct employment, the project is expected to generate substantial indirect employment in other sectors. So far indirect employment is concerned, the effect is very strong and widespread specifically, in ancillary industries, service and transport sectors. In view of the above, it can be justifiably concluded that the present project has tremendous positive employment and income effects. Overall assessment of the employment and income effects indicates that the project has strong positive direct as well as indirect impact on employment and income generation.

Other Tangible Benefits

The other tangible benefits will be in the form of plant township hospital and schooling facilities which will also help local population to enjoy the fruit of better facilities in nearby. BSP extends training facilities to vocational trainees from different colleges (engineering/medical) to impart necessary orientation and skill development.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

To ameliorate the adverse impacts of the project and for scientific development of the local environment, a comprehensive Environmental Management Plan (EMP) is necessary. This has been worked out based on present environmental conditions, environmental impact appraisal and environmental prediction. The EMP has been made for formulation, implementation and monitoring of environmental protection measures during and after commissioning of the project.

Air emission Management in the plant

All new units under expansion plan will have latest pollution control facilities, with a objective to reduce the emission .The design parameter for particulate matter emission for new units from each of pollution control system shall be 75 mg/Nm3 while norms is 150 mg/Nm3.The new coke oven battery will be state of art construction with most modern pollution control features. The new battery shall replace the existing 4.5 m tall batteries no 1, 7 & 8. In sinter plant dry type electrostatic precipitator (ESP) will be provided for the waste gas generated in the sinter plant. In Blast Furnace, a new BF No. 8 instead of BF 1, 2 & 3 will be commissioned. Latest environmental friendly technology like Coal Dust Injection (CDI), Cast house de-fuming system and Top gas pressure recovery turbine (TRT) will be provided.

All furnace in the mills will use clean fuel like mixed gases (generated from plant) and the flue gases shall be released through tall stacks. All scrap, Mill scale generated in the plant shall be recycled back to steel making process.

All dust generating point in the plant will be cleaned through dust extraction system (bag filter/ESP etc) and dust suppression system so that work zone atmosphere inside the plant will be within the norms. In addition dust suppression system will also be provided in the stock piles, wagon tippler etc. Fume extraction system will be provided in caster, Bf cast house etc.

Water Management in the plant

BSP has already adopted several water recycling measures and effluent treatment plants to minimise fresh water intake as well as for controlling pollution of surrounding water bodies. The proposed modification-cum-expansion may generate some wastewater however there are many units having older technology will also be phased out. Majority of the effluent water from the 3 outlets. Water from all three outlets will be recycled back to Plant.

Rain Water Harvesting

To increase the awareness among employees and restore the receding underground water table, roof rain water harvesting has been implemented in three schools in BSP Township. This is being extended to several other building in Township. Inside the Plant, roof rain water from Plate mill is diverted to Maroda-I recycling pond for reducing fresh water consumption. All new units coming will have the facility of rain water harvesting system.

Water Pollution Management

BSP has adopted several effluent treatment scheme to treat the waste water coming out from individual shop namely Gas cleaning plant in BF and SMS and water recycling measures to minimise pollution of surrounding water bodies i.e. Kharun River, Sheonath River and Maroda-I water reservoir

Noise Pollution Management

Various measures proposed to reduce noise pollution include reduction of noise at source, provision of acoustic lagging for the equipment and suction side silencers, vibration isolators, selection of low noise equipment, isolation of noisy equipment from working personnel. In some areas where due to technological process, it is not feasible to bring down the noise level within acceptable limits of 85 dBA (at 1 m from source), personnel working in these areas will be provided with noise exposure reduction aid such as ear muffs/ ear plugs and also the duration of exposure of the personnel will be limited as per the norms.

Solid Waste Management

BSP has taken various plans for utilisation of solid waste which is increasing over the time. BSP has capacity to granulate all the Blast Furnace slag. Presently 80% of total BF slag is granulated depending on the market demand in the plant and totally sold out to cement manufactures

From the current re-utilisation practice of solid waste generated at BSP it is expected that, the same trend will continue for the additional solid waste generated for the proposed expansion-cum-modernisation plan and it is expected that solid wastes like BF slag, BOF slag, lime and dolo fines, lime fines, mill scales and sinter plant ESP dust will be re-utilized / sold 100% and waste refractory will be partially re-utilised / sold.

The waste which cannot be reused / sold are being dumped in the plant boundary premises for which. an approximate 50 ha area is earmarked for BOF slag dump and 75 ha area is earmarked for BF slag.

As per Hazardous Waste (Management and handling) Rules, amended up to 2003, BSP has been authorized by Chhattisgarh Environment conservation Board. The guidelines of MOE & F are followed in the handling, storage and transportation of Hazardous waste. BSP does not import or export any waste deemed Hazardous under the items of the BASEL convention.

Green belt development

At present Horticulture department of BSP is looking after all plantation program in association with Environment Management Division (EnMD) of BSP and will continue to do so. About 8,50,000 trees have been planted inside the plant. In the town-ship 20, 12,532 nos. trees have been planted up to 2004 – 05 and another 100,000 trees are being planted in 2005 – 07. In addition about 5,00,000 trees have been planted in the township by various schools, social and cultural organisations and the residents. Around 1,50,000 trees will be planted in the next four years all along the boundary of the plant. The total area under green cover will be more than 30%. BSP ensures that these trees are protected. BSP ensures that these trees are protected. Besides there are about 240 ha of ornamental gardens within the township are available.

Training facilities

To achieve the objective of pollution control it is essential not only to provide latest pollution control and monitoring systems but also to provide trained man power to operate and maintain the same. The training is being given to employees to cover the following fields :

- Awareness of pollution control and environmental protection to all.
- Operation and maintenance of specialised pollution control equipment.
- Field monitoring, maintenance and calibration of pollution monitoring instruments.
- Laboratory testing of pollutants.
- Environmental management.