

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT PLAN

EXECUTIVE SUMMARY

FOR

Revised Configuration of 7.0 MTPA Modernization
-Cum-Expansion of BSP along with CPP
at
Bhilai, District Durg, Chhattisgarh

Project Proponent

EIA Consultant



Steel Authority of India Limited
Bhilai Steel Plant
Bhilai, Distt. Durg, Chhattisgarh
490001



MECON LIMITED
A Government of India
Enterprise, Vivekanand Path,
Doranda, Ranchi 834002
CERTIFICATE NO:
NABET/EIA/1619/RA0068

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STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



EXECUTIVE SUMMARY

1.0 INTRODUCTION

Bhilai Steel Plant (BSP), one of the most efficient integrated steel plants in the country and is the jewel in the crown of SAIL. BSP intends to achieve the goal of being a key player in world steel scenario, by being a low cost, high quality steel producer with a rich product port-folio. BSP is India's sole producer & supplier of world class rails for Indian Railways including 260 meter long rails. BSP is also a major producer of large variety of wide and heavy steel plates and other specialized products such as wire rods, merchant products, heavy structurals and earth quake resistant TMT products (Bars & Rods).

In pursuance of Environmental (Protection) Act, 1986 and EIA notification 2006 and amendments, new or expansion projects necessitate statutory prior environmental clearance by conducting an Environmental Impact Assessment (EIA) study. BSP entrusted MECON Limited to conduct an EIA/EMP study for the proposed project.

2.0 PROJECT DESCRIPTION

2.01 Location

The proposed project will be implemented within the existing plant premises of Bhilai Steel Plant (BSP). BSP is located in Bhilai, District Durg, Chhattisgarh about 40km by road towards west from Raipur, the capital city of Chhattisgarh State. BSP project boundary falls between North latitude 21⁰11' to 21⁰13' and East longitude 81⁰22'to 81⁰24' and under the Survey of India topo-sheet No. F44P08. BSP is located along the Howrah-Mumbai railway line. Nearest National Highway is Great Eastern Road (NH 6). Nearest big town is Durg at ~12 km distance and nearest operational Airport is Raipur which is ~45 km away.

2.02 Present Configuration of Bhilai Steel Plant

The 7.0 MTPA modernization-cum-expansion project as per EC 2008 and subsequent amendments is nearing completion. The present capacity and configuration of 7.0 MTPA BSP as per accorded environmental clearance and its amendments is given in **Table ES 1**.

Table ES 1: Present Configuration of Bhilai Steel Plant as per accorded EC in 2008 and amendments

SN.	7.0 MTPA Plant Configuration (as per EC 31.03.2008 & subsequent amendments)	Capacity
1	Sinter Plant Complex	9.235 MTPA
	Sinter Plant-1 (4 x 50 m ²) - Phased out	
	Sinter Plant-2 (3x75 m ² +1x 80 m ²)	
	Sinter Plant-3 : Machine 1 (1x 320 m ²)	
	Sinter Plant-3 : Machine 2 (1x 360 m ²)	
2	Coke Oven Complex	3.94 MTPA
	8 Nos. - 65 Oven 4.3 m tall battery i.e. Battery No. 1, 2, 3, 4, 5, 6, 7 & 8 and 3 Nos. - 67 Oven 7 m tall batteries, i.e. Coven Battery No.	



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



SN.	<i>7.0 MTPA Plant Configuration (as per EC 31.03.2008 & subsequent amendments)</i>	Capacity
	9, 10 & 11.	
	<ul style="list-style-type: none"> • 8 Battery Operation. • At any time 3 Coke Oven batteries will be shut-down for cold repair and rebuilding cycle. 	
3	Blast Furnace Complex	7.5 MTPA
	BF 1 with CDI (1033 m ³) – To be phased out gradually	
	BF 2 with TIS (1033 m ³) – To be phased out gradually	
	BF 3 with TIS (1033 m ³) – To be phased out gradually	
	BF 4, 1719 m ³	
	BF 5, 1719 m ³	
	BF 6, 1719 m ³	
	BF 7, 2363 m ³	
	BF 8, 4060 m ³ with TRT	
4.	Steel Making & Casting Units	7.0 MTPA
	SMS I	
	4x 500t Twin Hearth Furnace – To be phased out gradually	
	SMS II	
	3x120t BOF	
	2X120t LF	
	3x120t RH	
	1x120t VD	
	Hot metal De-sulphurisation	
	3x1 strand Slab Casters (MC#1, 2, 3)	
	Combi-Caster: Bloom (3 strand) cum Slab (1 strand) Caster (mc#4)	
	1x4 strand Bloom Caster (MC#5)	
	1x1 slab caster (mc#6)	
	SMS III	
	3x160 t BOF	
	3x160 t LFs	
	1x 160 t RH-OB	
	Hot metal De-sulphurisation	
	1 x vacuum tank degassing unit (Space provision)	
	2x6 strand Billet Casters	
	1x6 strand Bloom cum Billet Casters	
	1x3 strand Beam Blank Caster	
6	Rolling Mills	6.30 MTPA
	Rail & Structural with Universal Rail Mill - URM (2.2 MTPA)	
	Plate Mill (1.65 MTPA)	
	Bar & Rod Mill (0.90 MTPA)	
	Merchant Mill (0.85 MTPA)	
	Wire Rod Mill (0.7 MTPA)	
	Bloom and Billet Mill (2.149 MTPA) - To be phased out gradually	
7.	Power Blowing Station & Turbo-generators	1350TPH steam, Power Generation 94



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



SN.	<i>7.0 MTPA Plant Configuration (as per EC 31.03.2008 & subsequent amendments)</i>	Capacity
		MW
	6 x 150 tph boiler	
	1 x 150 tph boiler	
	3 x 12 MW	
	1 x 15 MW	
	2 x 150 tph BF gas fired boiler	
	1 x 25 MW	
	1350 tph steam, CPP Power Generation 76 MW	
	TRT Power Generation 14 MW	
	CDCP Power Generation 4 MW	
8.	Refractory Material Plant (RMP) : Lime & Dolo plant	1.58 TPD
	RMP I - To be phased out gradually	
	RMP - II <ul style="list-style-type: none"> • 2x 330 tpd + 1 x 144 tpd Lime kiln • 1x 330 tpd kiln 	
	RMP III 5x450 tpd lime and dolo kiln for SMS-III	
9.	Oxygen Plant : <ul style="list-style-type: none"> • 3 x 550 tpd and • 1 x 700 tpd 	
10.	Other Auxiliary facilities (Matching facilities for achieving production)	

2.03 Proposed Project

The 7.0 MTPA modernization-cum-expansion of BSP has already been undertaken as per the EC accorded in 2008 and subsequent amendments.

During detailed engineering and execution of the modernization-cum-expansion project, for techno-economic advantage, certain changes were envisaged viz. change in production capacity of sinter plant vis-à-vis increase in requirement of iron ore fines, inclusion of one more coke oven battery in operation (without change in total coke production), while keeping the hot metal, crude steel production, finished steel production and power generation same as per the EC accorded in 2008 and its amendments. Moreover, some new units are envisaged, like Argon Rinsing Unit (ARU) in SMS-III, Quenching and Tampering facility in Plate mill. Additionally, in SMS-III the 1x3 strand Beam Blank caster will be converted in to 1x3 strands Bloom-cum-Beam-Blank caster.

Further being a brown field project, site-specific technological hindrances during project execution delayed the implementation envisaged units of 7.0 MTPA project to come into full production / stabilization within the stipulated EC period. As per Environmental Clearance accorded in 2008 and subsequent amendments ending 15-01-2018 , Bhilai Steel Plant was to gradually/progressively phase out some older units like Blast Furnace-1(BF-1), Blast Furnace-2 (BF-2) & Blast Furnace-3 (BF-3) , Steel Melting Ship-1 (SMS-1), Blooming and Billet Mill (BBM) and Refractory Material Plant (RMP-1) after



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



installation and commissioning of units under 7.0 MTPA modernization –cum-expansion (MODEX) project. In view of the estimated time required for stabilization of new units and ramping up of production to achieve the rated capacities of these MODEX units ,Bhilai Steel Plant has now formulated phase out plan for the above mentioned older units which may take additional three years. The phasing out of the above mentioned units has already started and during this three years period the total production will remain within the EC accorded in 2008, i.e 7.5 MTPA hot metal, 7.0 MTPA crude steel and 6.3 MTPA finished steel.

The above project aspects are envisaged as additional and associated to the 7.0 MTPA modernization-cum-expansion project and have been as titled as "**Revised Configuration of 7.0 MTPA Modernization-Cum-Expansion of SAIL- Bhilai Steel Plant along with Captive Power Plant**". The proposed projects are envisaged for techno-economic advantage during project operation. While there will be no change in hot metal, crude steel and finished steel production and power generation, which will remain same as per the EC accorded in 2008. The proposed project will be implemented after the grant of EC from MoEFCC.

The capacities/configuration of the proposed units/modification under the present proposal is in **Table ES 2** below.

Table ES 2: Present proposal – New units / Modernisation

SN	Units	Present proposals – New units / Modernisation requested
1.	SMS-III	Addition of new 3x160 t Argon Rinsing Unit (ARU)
		Modification of 1x3 strand Beam Blank caster in to 1x3 strand Bloom-cum-Bean Blank caster of same capacity
2.	Plate Mill	Addition of new Quenching and tempering facility
3.	Coke Oven Complex	Bringing in of one more Coke Oven Battery in operation to achieve the desired coke production (3.94 MTPA) for 7.0 MTPA crude steel production.
4.	Sinter Plant-III (Machine-2)	Increase of total sinter production from sinter plant complex (from 9.235 MTPA to 9.772 MTPA) by operational optimization.
5.	Blast Furnace-1 (BF-1)	In operation during the sequential capital repair of BF-4, BF-5 & BF-6 & BF8 Stabilisation / coming in to full production. Expected time required is 3 years.
6.	Steel Melting Shop-I (SMS-I)	In operation till SMS-III Stabilisation / coming in to full production & BF8 Stabilisation / coming in to full production. Expected time required 3 years.
7.	Refractory Material Plant-I (RMP-I)	
8.	Blooming & Billet Mill (BBM)	

2.04 Resource Requirements

There will be no increase in production of hot metal, crude steel, finished steel, coke, lime and dolo due to the proposed associated / additional projects envisaged under the revised configuration of 7.0 MTPA modernisation-cum-expansion project. However, only the sinter production is envisaged to increase through operational optimisation. No



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



additional land, power, fuel, water will be required and no additional solid waste and waste water generation have been envisaged.

2.05 Project Cost

The proposed associated / additional projects under the revised configuration of 7.0 MTPA modernisation-cum-expansion project have been envisaged. The Capital Cost of the proposed project is estimated to be **Rs 273 Crores**.

3.0 DESCRIPTION OF THE ENVIRONMENT

Study area has been taken as 10km radius around the project boundary. The baseline environmental data were generated during October to December 2017 (post monsoon season) to study the environmental attributes.

Meteorology:

A meteorological station was set up at Ispat Bhawan (Latitude 21°11'49.23"N, Longitude 81°22'49.69"E). The predominant wind directions were NE (20.02%), ENE (12.59%), E (12.14%), NNE (11.37%) and calm conditions were for 14.95% of the time. The wind velocity was mostly between 1.6 to 18.0 km/hr.

Air Environment

Ambient Air Quality (AAQ) was monitored in terms of Particulate Matter (PM_{2.5} & PM₁₀), Sulphur-di-oxide (SO₂), Oxides of Nitrogen (NO_x), Ammonia (NH₃), Lead (Pb), Nickle (Ni), Arsenic (As), Carbon monoxide (CO), Benzene (C₆H₆), Benzo (a) pyrene (BaP) and ground level Ozone (O₃) through a planned field monitoring from 8 location all around the plant. The maximum values of all the pollutants were below the National AAQ Standards (**Table ES 4**).

Table ES 4a: Summarised Ambient Air Quality Data

Parameter	Norms	Statistical data	Pauwara (A1)	Dumardih (A2)	Batang (A3)	Charoda (A4)	Shantinagar (A5)	Pahandor (A6)	Sector 9 (A7)	Dhanaura (A8)
PM ₁₀ (µg/m ³)	100	Max	80	77	76	83	83	76	77	80
		Min	42	47	39	50	50	46	49	38
		Average	69	68	68	74	72	70	67	64
		C ₉₈	79	77	76	83	83	76	77	80
PM _{2.5} (µg/m ³)	60	Max	39	38	37	40	42	38	38	43
		Min	20	22	19	27	26	24	24	18
		Average	33	33	33	35	35	34	34	32
		C ₉₈	38	38	37	40	42	38	38	43
SO ₂ (µg/m ³)	80	Max	19.5	17.8	18.4	18.6	23.1	19.5	18.6	21.8
		Min	9.7	7.6	6.4	5.2	12.0	4.8	7.7	5.1
		Average	13.6	12.7	12.4	12.9	17.0	13.3	13.4	14.3
		C ₉₈	18.8	17.7	18.3	18.2	22.5	19.2	18.4	21.8
NO _x (µg/m ³)	80	Max	26.7	28.3	24.0	29.6	31.9	29.8	28.8	29.9
		Min	16.7	15.5	14.5	17.1	19.1	17.9	17.7	15.6
		Average	20.8	21.2	20.4	24.3	25.7	24.6	22.0	25.0
		C ₉₈	25.2	26.0	23.8	29.6	31.8	29.6	27.0	29.9
CO (mg/m ³)	4	Max	2.729	1.565	2.487	2.393	1.509	2.521	2.501	2.764



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



Parameter	Norms	Statistical data	Pauwara (A1)	Dumardih (A2)	Batang (A3)	Charoda (A4)	Shantinagar (A5)	Pahandor (A6)	Sector 9 (A7)	Dhanaura (A8)
		Min	0.262	0.345	0.542	0.529	0.402	0.371	0.400	0.580
		Average	1.050	0.891	1.501	1.340	0.953	1.220	1.282	1.342
		C ₉₈	2.572	1.556	2.361	2.291	1.505	2.439	2.498	2.749
		Max	27.1	28.8	29.3	29.0	39.8	27.0	31.6	31.8
NH ₃ (µg/m ³)	400	Min	10.9	13.2	14.3	14.4	19.3	10.3	10.1	14.7
		Average	19.5	19.3	21.8	21.8	28.3	19.0	21.3	20.9
		C ₉₈	27.0	28.8	28.7	28.7	39.2	26.6	31.4	30.9
		Max	51	43	44	54	54	42	41	43
Ozone (µg/m ³)	100	Min	33	34	30	39	33	31	30	30
		Average	43	38	38	45	41	37	36	35
		C ₉₈	50	42	44	53	54	42	41	42
		Max	51	43	44	54	54	42	41	43

Table ES 4a: Summarised Ambient Air Quality Data

Parameter	Norms	Date	Pauwara (A1)	Dumardih (A2)	Batang (A3)	Charoda (A4)	Shantinagar (A5)	Pahandor (A6)	Sector 9 (A7)	Dhanaura (A8)
Pb (µg/m ³)	1	08.10.2017	0.0227	0.0245	0.0260	0.0928	0.0346	0.0831	0.0306	0.0160
		10.11.2017	0.0188	0.0238	0.0603	0.0412	0.0417	0.0316	0.0301	0.0376
		15.12.2017	0.1182	0.2101	0.0488	0.0673	0.0235	0.0583	0.1089	0.0155
Ni (ng/m ³)	20	08.10.2017	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	3.1497
		10.11.2017	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000
		15.12.2017	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000	<0.6000
As (ng/m ³)	6	08.10.2017	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000
		10.11.2017	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000
		15.12.2017	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000	<1.8000
B(a)P (ng/m ³)	1	11.10.2017	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100
		13.11.2017	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100
		20.12.2017	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100	<0.2100
Benzene (µg/m ³)	5	06-11.10.17	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08
		04-09.10.17	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	3.54
		03-08.10.17	<2.08	<2.08	<2.08	<2.08	2.75	<2.08	2.20	3.35

Water Environment

Seventeen water-sampling locations, covering nine surface water and eight ground water were selected in and around the plant. In surface water samples from different locations all the parameters were within the CPCB norms for Classes A, B and C of surface water. In absence of any specific norms for Ground Water Quality, the results have been compared with drinking water quality standards specified in IS: 10500 (2012). In ground water samples from different locations most of the parameters were within the the respective acceptable limit of IS: 10500 except for the aluminium, calcium, total hardness and total alkalinity. Aluminium, Ca, total hardness and total alkalinity levels are more than the acceptable limits but within the desirable limit.



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



Soil

Soil samples were analysed for five locations in and around the project site. Overall the soil in the area is capable to support plant growth.

Ambient Noise Environment

Noise monitoring was conducted at eight locations in and around the project site. The values at all stations were below the respective statutory norms as applicable.

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. Due to lack of suitable habitat only the common animals are found.

Stack Monitoring

Stack monitoring was carried out on all major stacks and it was observed that emissions are well within the MoEFCC (2012) norms.

Work Zone Monitoring

Work zone air monitoring was carried out on all major shops and it was observed that most of the area of BSP is well within the MoEFCC (2012) norms.

Effluents and Sewage Characteristics

Effluent characteristic at effluent treatment plant (ETP) outlet of BOD plant, Sinter Plant (SP), Blast furnace (BF), Steel Melting Shop (SMS) and Plate Mill were analysed and it was observed that after treatment all the parameters are within the specified norms. The water from the outlet of BOD plant and other units are recycled and reused in the plant.

Sewage characteristics at the outlet of 30 MLD STP, Risali Oxidation Pond and Bhilai House Oxidation Pond were analysed and it was found that the treated sewage characteristics were within the specified MoEFCC norm. Presently from 30MLD plant is 100% recycled for industrial use and from Risali and Bhilai House Oxidation Pond plant partly being recycled and partly discharged to Sheonath / Kharun rivers. However, by 2021 BSP is committed to implement different schemes to recycle the water for industrial use.

Treated Waste Water Outlet Quality

The waste water from outlet points (A, B and C) of BSP were analysed and it was found that all the parameters are within the specified MoEFCC norm. Presently from outlet A water is 100% recycled for industrial use and outlet B & C water are partly being recycled and partly discharged to Sheonath / Kharun rivers. However, by 2021 BSP is committed to implement different schemes to recycle the water for industrial use to achieve zero discharge.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

The present proposal is for only addition of some associated sub-units in the nearly completing 7.0 MTPA modernization-cum-expansion project of BSP without increase in



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
 EIA-EMP Studies for Revised Configuration of 7.0 MTPA
 Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
 Chhattisgarh



production of hot metal or crude steel or finished steel. Therefore impacts due to the proposed modification / addition are minimal.

4.01 Impact During Construction

The proposed project 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

Based on the proposed project two scenarios were analysed. Scenario 1 for the initial three years and Scenario 2 after three years of the project.

In two scenarios maximum ground level concentration of PM₁₀, SO₂ and NO_x were predicted and subsequent resultant change in Ambient Air Quality was arrived and given in **Table Es. 5a** and **5b**. From the two scenarios it can be seen that though there will be slight increase in pollutants level in ambient air for the initial three years but after three years (scenario 2) the air quality will improve due to closer of older units. However, under both scenarios the anticipated AAQ will be within the National Ambient Air Quality norms.

Table Es.5a : Scenario 1 – For Initial 3 years Due to the Proposed Project

SN	Location	Predicted Pollutant Concentration under Scenario 1								
		PM ₁₀ (µg/m ³)			SO ₂ (µg/m ³)			NO _x (µg/m ³)		
		Predicted level	Monitored Max. Conc.	Max. conc. after Project	Predicted level	Monitored Max. Conc.	Max. conc. after Project	Predicted level	Monitored Max. Conc.	Max. conc. after Project
1	Pauwara (A1)	2.75	80	82.75	2.0	80	21.50	2.00	26.7	28.70
2	Dumardih (A2)	1.49	77	78.49	1.63	77	19.43	1.27	28.3	29.57
3	Batang (A3)	0.80	76	76.80	0.86	76	19.26	0.76	24.0	24.76
4	Charoda(A4)	0.36	83	83.36	0.39	83	18.99	0.33	29.6	29.93
5	Shantinagar (A5)	1.44	83	84.44	1.60	83	24.70	1.44	31.9	33.34
6	Pahandor (A6)	1.96	76	77.96	1.23	76	20.73	1.34	29.8	31.14
7	Sector 9 (A7)	1.85	77	78.85	1.90	77	20.50	1.44	28.8	30.24
8	Dhanaura(A8)	1.92	80	81.92	1.58	80	23.38	1.51	29.9	31.41



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
 EIA-EMP Studies for Revised Configuration of 7.0 MTPA
 Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
 Chhattisgarh



Table Es. 5b : Scenario 2 – After 3 years Due to the Proposed Project

SN	Location	Predicted Pollutant Concentration under Scenario 1								
		PM ₁₀ (µg/m ³)			SO ₂ (µg/m ³)			NO _x (µg/m ³)		
		Scenario 1 Predicted level	Scenario 2 Predicted level	Max. conc. after Project	Scenario 1 Predicted level	Scenario 2 Predicted level	Max. conc. after Project	Scenario 1 Predicted level	Scenario 2 Predicted level	Max. conc. after Project
1	Pauwara (A1)	82.75	(-) 3.64	79.11	21.50	(-) 3.95	17.55	28.70	(-) 4.31	24.39
2	Dumardih (A2)	78.49	(-) 2.38	76.11	19.43	(-) 2.64	16.79	29.57	(-) 2.79	26.78
3	Batang (A3)	76.80	(-) 2.97	73.83	19.26	(-) 2.98	16.28	24.76	(-) 3.13	21.63
4	Charoda(A4)	83.36	(-) 0.87	82.49	18.99	(-) 0.94	18.05	29.93	(-) 0.99	28.94
5	Shantinagar (A5)	84.44	(-) 2.22	82.22	24.70	(-) 2.52	22.18	33.34	(-) 2.74	30.60
6	Pahandor (A6)	77.96	(-) 1.97	75.99	20.73	(-) 2.20	18.53	31.14	(-) 2.31	28.83
7	Sector 9 (A7)	78.85	(-) 4.73	74.12	20.50	(-) 5.27	15.23	30.24	(-) 5.54	24.70
8	Dhanaura(A8)	81.92	(-) 3.41	78.51	23.38	(-) 3.78	19.60	31.41	(-) 3.98	27.43

Impact on Water Environment

The proposed project will not require any additional water from that required for 7.0 MTPA modernization-cum-expansion. Total Water requirement from WRD for 7.0 MTPA project is 5.0TMCft/y. The present permission from State government is 4.0TMCft/y for additional water application has been made and it is expected to get the same. Additionally water recycling schemes are being implemented to recycle treated sewage water and outfall water for industrial use.

Impact on Land Environment

The proposed project is a small part of the earlier existing 7.0 MTPA project and any additional impact from the present project is not anticipated.

Impact on Noise Levels



The proposed project is a small part of the earlier existing 7.0 MTPA project. The noise level due to the existing project at the plant boundary is within the norms and any additional change from the present project is not anticipated.

Impact on Traffic Density

In the proposed project there will be an increase in iron ore fines requirement, which presently is being transported through rail from Dalli, Rajhara / Rowghat. The additional requirement of the same will be met from the same source and same mode of transportation and thus no impact on road traffic is envisaged.

Impact on Ecological Features

Setting up of the proposed associated/additional units will lead to no loss of vegetation. as the project area lies within the existing steel plant and requires only a small proportion of the area within a shop, therefore the impacts of the loss of vegetation on the ecology of the study area is not been envisaged.

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Occupational Safety & Health Plan

BSP has a full-fledged Occupational Health Services Center inside the plant premises, with round the clock doctor facility. Medical checkups are carried out for all the workers at regular intervals. Facilities for carrying out lung function test, sputum test, X-ray etc., are available. First aid boxes are provided at strategic locations at shop floor.

5.0 ANALYSIS OF ALTERNATIVES

The proposed project is planned within the existing plant boundary. The proposed project is additional and associated to the present 7.0 MTPA project and thus no alternative site or technology was envisaged.

6.0 ENVIRONMENTAL MONITORING PROGRAMME

The present project proposal is for seeking Environmental Clearance, only for the "**additional / associated projects**" of BSP 7.0 MTPA project which is a small component of a very large project. For which an elaborate monitoring arrangement is already in place to monitor the effectiveness of pollution control equipments and meeting the statutory reporting requirements. The same monitoring arrangement will cater to the proposed project.

7.0 ADDITIONAL STUDIES

7.1 Social Impact Assessment

The proposed projects with a total investment of about 273 crores is only associated and additional projects of 7.0 MTPA project. BSP is established in the area since early fifties and has considerably contributed to the socio-economic development of Bhilai and nearby areas, which over the years with the presence of BSP has developed in to a well developed city with all infrastructure amenities. Thus the socio-economic impact / advantages / disadvantages and mitigative measures is considered with respect to BSP as a whole.

The following conclusions are drawn:

- i) There is not going to be any damage to the existing agricultural situation.
- ii) 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.
- ii) Strong positive effect on average consumption in the study area which is likely to lead to increase average income through multiplier effect.
- iii) Very strong positive employment and income effects, because of increasing activity in ancillary industries and service sectors.
- iv) Increase in industrialisation in the vicinity of BSP. This is likely to bring more skill diversification among local people.
- v) Positive impact on educational status of people of the study area.
- vi) Positive impact on community development activities of BSP which are likely to bring handful of benefits to the people of the study area.
- vii) Overall peoples' perception on the project is good.



STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT
EXECUTIVE SUMMARY
EIA-EMP Studies for Revised Configuration of 7.0 MTPA
Modernization-Cum-Expansion of BSP along with CPP at Bhilai,
Chhattisgarh



7.2 Disaster Management Plan

The proposed project is a small component of a very large existing 7.0 MTPA project, for which already disaster management plan for its different shops has been made. The same will be followed for the proposed project. BSP also renders help to District Govt authorities by offering fire tenders, hospital facilities etc in case of eventualities in surroundings.

8.0 PROJECT BENEFITS

Improvement in the Social Infrastructure

The major areas where Bhilai Steel Plant has been taken up social responsibilities through its ongoing CSR activities are

- Medical & Health Services;
- Education,
- Housing & Township facilities;
- Social security measures;
- Promoting Sports & Cultural activities;
- Concern for society and Environment Protection
- Community development & cultural events in villages
- Health camps in surrounding areas.

Other Tangible Benefits

Other tangible benefits are in the form of hospital and schooling facilities. The CSR Corporate Social responsibility (CSR) activities have helped local population to enjoy the development of better infrastructure and social amenities in the nearby area.

9.0 ENVIRONMENTAL MANAGEMENT PLAN

The proposed project is a small component of a very large 7.0 MTPA project, for which environmental management plan is already operating. The same will be followed for the proposed project also.

Rain Water Harvesting

Bhilai Steel Plant has constructed rain water harvesting systems in several units within plant premises and in identified buildings of Bhilai Township, wherein the rain water system has been established to recharge ground water through recharges pits. Further few more building in plant and township are proposed for implementation of rain water harvesting system.

Green belt development

BSP has developed greenbelt / green cover within and around the plant area in **4227 acre (1171.33 ha)**, wherein about **41,92,144 trees** have been planted. A total of more than 33% of plant area is been developed as green belt. Future areas proposed for green belt / green cover are :

1. Around Plant boundary
2. Around Waste Dumps

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3. Avenue Plantation
4. Around Various Shops
5. Around Office and Other Buildings
6. In and Around Township

10.0 **CONCLUSION**

In the present proposal only associated/additional units to the existing 7.0 MTPA modernization-cum-expansion project has been envisaged, without increase in hot metal, crude steel and finished steel production.

Environmental Impact Assessment (EIA) was done to assess the possible impacts of the proposed units of BSP. In the design phase of the 7.0 MTPA project, latest state-of-the-art technology had been envisaged to achieve the desired air emissions and noise levels from plant operations. The effluents generated from the units are being recycled and reused. Further, maximum re-use and re-utilization of generated solid waste is being practiced. Overall, BSP has taken up all possible measures to expand its industrial operations with minimum effect on the environment.