

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

OF

Phil Ispat Private Limited

Expansion of Steel Plant
at
Dighora (Village), Takhatpur (Tehsil),
Bilaspur (District), Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

PHIL ISPAT PRIVATE LIMITED is operating 2 x 100 TPD Sponge Iron plant Bio at Digora Village, Takhatpur Tehsil, Bilaspur District (C.G.). Environment Clearance was not applicable to the existing plant as CTE has been obtained in June 2006 and was prior to EIA Notification dated 14-09-2006. As per EIA Notification 1994 also EC was not required as the capital investment for green field project was less than Rs. 100 Crores. Existing plant has obtained Consent to Establishment vide letter no. 2202 / TS / CECEB / 2005 dated 12/05/2005 from Chhattisgarh Environment Conservation Board (CECB). Proposed expansion will be taken up in the existing plant premises only over an extent of 27.78 Acres (11.24 Ha.) & also an additional land of 2.40 acres.

Now as a part of expansion, company is planning to go for expansion of Sponge Iron unit capacity from 60,000 TPA to 1,75,500 TPA and installation of New Induction Furnace to manufacture 1,53,000 TPA of M.S. Ingots / Billets, New Rolling Mill to manufacture 1,53,000 TPA of TMT bars / Structural Steel / Rolled Products & Power plant - 18 MW (WHRB – 12 MW & FBC – 6 MW).

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Primary metallurgical processing industries are classified under Category 'A'. The Ministry of Environment, Forests & Climate Change, New Delhi has accorded Terms of Reference (TOR) for the proposed project vide letter no . J-11011/280/2018-IA II (I) **dated** 9th November 2018. The EIA Report has been prepared by incorporating the TOR stipulated by the Hon'ble EAC.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/ EIA/ 1619/ RA 026, for preparing EIA report for Metallurgical Unit, have prepared Draft Environmental Impact Assessment (EIA) report for the proposed expansion project by incorporating the TOR approved by Ministry of Environment, Forests & Climate Change, New Delhi. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- Assessment of air emissions, liquid waste and solid waste from the proposed expansion project along with the noise level assessment.
- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

1.1 ENVIRONMENTAL SETTING WITHIN 10 Km. RADIUS OF THE PLANT SITE

The following is the environmental setting within the 10 Km. radius of the Plant site:

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Existing Plant (Industrial land)
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements – 3.4 %; Industrial Area – 1.6 %; Tank / River – 7.6 %; Single crop – 60.1%; Double crop – 14.7 %; Land with scrub – 6.7 %; Land without scrub – 3.1%; Mining area – 2.8 %.
3.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
5.	Critically polluted area as per MoEF&CC Office Memorandum dated 13 th January 2010	Nil
6.	Defence Installations	Nil
7.	Nearest village	Few Habitations exist proximate to Site. However nearest Village is Dighora (0.5 Kms.)
8.	No. of Villages in the Study Area	73 nos.
9.	Nearest Hospital	2.7 Kms. (SE) By Road
10.	Nearest School	0.55 Kms. (NE) By Road

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
11.	Forests	Nil
12.	Water body	Maniyari River – 0.75 Kms; Ghongha Stream – 2.3 Kms. Tesua Stream – 7.60 Kms; Turturia Nala – 4.1 Kms. & few ponds exists within 10 Km radius
13.	Nearest Highway	NH # 130 (Bilaspur – Simga road) – 3.1 Kms.
14.	Nearest Railway Station	Bilha R.S. - 6.8 Kms.
15.	Nearest Port facility	Nil
16.	Nearest Airport	Nil (Raipur – 120 Kms.)
17.	Nearest Interstate Boundary	Nil (Madhya Pradesh inter State Boundary is @74 Km. radius)
18.	Seismic zoneas per IS-1893	Seismic zone – II
19.	R & R	Not applicable as there are no habitations in the additional land proposed for expansion.
20.	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	Nil

Following is list of industries (Major) presently located within 10 Km radius of the site:

S.No.	Name of Industry	Type of Industry
1.	M/s. Mangal Sponge & Steel Pvt. Ltd.	Steel Plant
2.	M/s. Real Power Pvt. Ltd.	Steel Plant
3.	M/s. Agrawal Minerals Goa Pvt. Ltd.	Dolomite Mines
4.	M/s. Hirri Mines	Dolomite Mines

1.2 Plant Configuration and Production Capacity

Following is plant configuration and production capacity proposed now

S.No.	Name of the Product	Existing	Proposed expansion	After proposed expansion
1	DRI plant (Sponge Iron)	60,000 TPA (2x100 TPD)	1,15,500 TPA (1 x 350 TPD)	1,75,500 TPA (2 x 100 TPD & 1 x 350 TPD)
2	Induction Furnace (M.S. Billets / M.s. Ingots / Hot Metal)	---	1,53,000 TPA (3 x 15 T)	1,53,000 TPA (3 x 15 T)
3	Rolling Mill (TMT Bars / Structural Steels / Rolled Products)	--	1,53,000 TPA (30 TPH)	1,53,000 TPA (30 TPH)
4	Captive Power plant	--	WHRB – 1 x 4 & 1 x 8 MW CFBC – 1x 6 MW	WHRB – 12 MW CFBC – 6 MW

The proposed Steel Plant will produce the following products:

Unit	:	Description
DRI Kiln	:	Manufacturing of Sponge Iron using Iron Ore, Dolomite, Limestone and Coal as raw materials
Induction Furnace	:	Manufacturing of MS Billets using Sponge Iron, MS Scrap, Ferro Alloys as raw materials
Rolling Mill	:	Manufacturing of Rolled Product using MS Ingots / Steel Billets. By utilizing Pulverized Coal / Furnace oil as fuel.
Power generation	:	By utilizing hot waste flue gases from DRI kilns in WHRB. By utilizing Coal / Dolochar in CFBC boiler as fuel.

1.3 Raw Materials (For Expansion project)

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

Raw Material		Quantity (TPA)	Source	Mode of Transport
For DRI Kilns (Sponge Iron –1,15,500 TPA)				
Iron ore / Pellets		1,84,800	NMDC and Other Supplies from Chhattisgarh and Odisha	By rail & road (through covered trucks)
Limestone		15,015	Chhattisgarh	By road (through covered trucks)
Coal	Indian	1,50,150	SECL and others from Chhattisgarh and Odisha	By rail & road (through covered trucks)
	Imported	96,100	South African and Australian	Through sea route, rail route & by road
For Induction Furnace (MS Billets – 1,53,000 TPA)				
Sponge Iron		1,65,240	In-house generation	By Conveyor
Scrap		21,420	Chhattisgarh and Odisha	By road (through covered trucks)
Ferro Alloys		2,295	Chhattisgarh	By road (through covered trucks)
For Rolling Mill – 1,53,000 TPA (TMT bars & Structural Steel)				
M.S. Ingots / Steel billets		1,75,950	In-house generation	through conveyors
Furnace oil		7,650	Chhattisgarh	Tankers
		Or		
Pulverized coal	Indian	31520	SECL and Others from Chhattisgarh and Odisha	By road (through covered trucks)
	Imported	20170	South African and Australian	Through sea route / rail route / by road
For FBC Boiler				

Raw Material		Quantity (TPA)	Source	Mode of Transport
[Power Generation 6 MW]				
Dolochar		34,650	In-house generation	through covered conveyors
Coal	Indian (100 %)	37,800	SECL and Others from Chhattisgarh and Odisha	By rail & road (through covered trucks)
	Imported (100 %)	25,200	South African and Australian	Through sea route / rail route / by road

1.4 Manufacturing Process

1.4.1 Sponge Iron (DRI)

Refractory lined rotary kilns will be used for reduction of iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln.

Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000⁰C enters the reduction zone. Temperature of the order of 1050⁰C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron.

This hot material will be transferred to Heat exchanger. In Heat exchanger the material will be cooled to 160⁰C. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char. Magnetic and non-magnetic material will be separated through magnetic separators and stored in separate bins. The hot flue gases will be taken to a Waste Heat Recovery Boilers and after heat recovery they will be treated in high efficiency

ESP and discharged into the atmosphere through stack whose height will be in accordance with CPCB norms.

1.4.5 Steel Melting Shop

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel and then to mould it in required size billets. The SMS will consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). There will be 3 nos. of Induction Furnaces in the SMS plant, each of 15 T capacity to produce M.S. Billets / M.s. Ingots / Hot Metal. The Hot Metal produced from LRF will be directly sent to Rolling Mill without using Re-heating Furnace through Hot charging method (OR) Hot metal will be sent to CCM and thereby M.S. Billets / M.s. Ingots will be produced.

1.4.6 Rolling Mill

The Hot Metal produced in Induction Furnace will be directly sent to Rolling Mill to produce Rolled Products (OR) if M.S. Billets / M.s. Ingots produced in Induction Furnace will be sent to 30 TPH reheating furnace for the heating and will be sent to Rolling Mill. Furnace will be heated with Pulverized Coal / Furnace oil. A bar and round mill will be installed in the plant to produce 1,53,000 TPA of TMT Bars / Structural Steels / Rolled Products.

1.4.7 Power Generation

Through WHRB Boiler

The hot flue gases from existing DRI Kiln (2x 100 TPD) & proposed DRI kiln (1x350 TPD) will pass through waste heat recovery Boiler to recover the heat and to generate 1 x 4 MW & 1x8 MW electricity. The gases after heat recovery will pass through ESP and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere.

Through CFBC Boiler

Coal (Imported / Indian) and dolochar will be used in CFBC Boiler of 24 TPH capacity to generate 6 MW electricity. The flue-gases will be treated in high efficiency ESP and then discharged through stack into the atmosphere.

1.5 Water Requirement

Water required in the existing biomass power plant is 50 KLD and is being sourced from Ground water. Water required for the proposed project will be 263 KLD and same will also be sourced from Ground water resources / Maniyari river. This includes Make-up water for DRI Kiln, Induction Furnace, Rolling Mill, Power Plant & for Domestic purpose. Air-cooled condensers will be provided in Power plant. Hence the net water requirement will be substantially reduced.

An application has been submitted to CGWA for NOC, which is under process. The following is the break-up of the water requirement for proposed project.

WATER REQUIREMENT

S.No.	Item	For Existing (in KLD)	For Expansion (in KLD)	After Expansion (in KLD)
1	Sponge Iron	45	70	115
2	Induction Furnace	---	30	30
3	Rolling Mill	---	25	25
4	Power Plant (WHRB : 12 MW + FBC : 6 MW)			
a	Cooling tower make up	---	28	28
b	DM water for boilers	---	80	80
c	DM Plant regeneration	---	20	20
5	Domestic requirement	5	10	15
	Total	50	263	313

1.6 Waste Water Generation

Closed loop cooling water system will be adopted in DRI, SMS, and Rolling Mill units. The effluent generated from Rolling Mill will be sent to settling tank & clear water will be recycled through closed circuit cooling system. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Sanitary waste water will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed. The following will be the total wastewater & it's break-up.

BREAKUP OF WASTE WATER GENERATION

S.No.	Source	Generation (KLD)		
		Existing Plant	Present Proposal	Total after present proposal
1.	Sponge Iron	Nil	Nil	Nil
2.	Induction Furnace	---	Nil	Nil
3.	Rolling Mill	---	Nil	Nil
4.	Power Plant			
	a) Cooling Tower blowdown	Nil	10	10
	b) Boilers blowdown	Nil	20	20
	c) D.M. plant regeneration water	Nil	20	20
5.	Sanitary Wastewater	4	8	12
	Total	4	58	62

1.7 Wastewater Characteristics

PARAMETER	CONCENTRATION			
	DM plant regeneration	Boiler blowdown	Cooling Tower blowdown	Sanitary waste water
pH	4 – 10	9.5 – 10.5	7.0 – 8.0	7.0 – 8.5
BOD (mg/l)	--	--	--	200 – 250
COD (mg/l)	--	--	--	300 – 400
TDS (mg/l)	5000 -6000	1000	1000	800 – 900
Oil & Grease (mg/l)	--	10	--	--

2.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, flora and fauna and socio economic details of people within 10 km radius of the plant.

2.1 Ambient air quality

Ambient air quality was monitored for PM_{2.5}, PM₁₀, SO₂, NO_x & CO at 8 stations including project site during March 2018 to May 2018. The following are the concentrations of various parameters at the monitoring stations:

Parameter	Concentration
PM _{2.5}	: 23.6 to 37.2 µg/m ³
PM ₁₀ *	: 38.2 to 63.2 µg/m ³
SO ₂	: 7.6 to 12.8 µg/m ³
NO _x	: 8.3 to 17.2 µg/m ³
CO	: 452 to 1088 µg/m ³

2.2 Water Quality

2.2.1 Surface Water Quality

Maniari River (0.75 Kms.), Ghongha Stream (2.3 Kms.), Tesua Stream (7.6 Kms.) & Turturia Nala (4.1 Kms.) are exists within 10 Km. radius of the plant site. Two samples (60 m Upstream and 60 m Downstream) from Maniari River and One sample from Ghongha Stream & one sample from Tesua Stream have been collected and analyzed for various parameters. No other surface water samples have been collected as the study period is summer season. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

8 No. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

2.3 Noise Levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from **40.9 dBA to 67.6 dBA**.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are PM₁₀, SO₂, NO_x & CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model.

The predicted max. Incremental PM₁₀ concentrations (24 hourly) due to the emissions from operation of proposed project will be **1.8 ~g/m³** at a distance of 1300 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in PM concentration due to the Vehicular emission will be **0.49 ~g/m³**.

The predicted max incremental SO₂ concentrations (24 hourly) due to the emissions from operation of proposed project will be **14.9 ~g/m³** at a distance of 1300 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NO_x concentrations (24 hourly) due to the emissions from operation of proposed project will be **11.3 ~g/m³** at a distance of 1300 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NO_x concentration due to the Vehicular emission will be **3.8 ~g/m³**.

The predicted incremental rise in CO concentration due to the Vehicular emission will be **2.2 ~g/m³**.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT

Item	PM ₁₀ (~g/m ³)	SO ₂ (~g/m ³)	NO _x (~g/m ³)	CO (~g/m ³)
Maximum baseline conc. in the study area	63.2	12.8	13.5	1088
Maximum predicted incremental rise in concentration due to PIPL	1.8	14.9	11.3	--
Maximum predicted incremental rise in concentration due to Vehicular Emissions from the proposed project	0.49	--	3.8	2.2
Net resultant concentrations during operation of the plant	65.49	27.7	28.6	1090.2
National Ambient Air Quality Standards	100	80	80	2000

The net resultant Ground level concentrations during operation of the expansion project are within the NAAQS. Hence there will not be any adverse impact on air environment due to the proposed expansion project.

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-

2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. **10 acres (4.05 Ha.)** of extensive greenbelt will be developed (inclusive of existing) to further attenuate the noise levels. Hence there will not be any adverse impact due to noise on population in surrounding areas due to the proposed expansion project.

3.3 Prediction of impacts on Water Environment

Closed loop cooling water system will be adopted in DRI, SMS, and Rolling Mill units. The effluent generated from Rolling Mill will be sent to settling tank & clear water will be recycled through closed circuit cooling system. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Sanitary waste water will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed. Hence there will not be any adverse impact on environment due to the proposed project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. **10 acres (4.05 Ha.)** of extensive greenbelt will be developed (inclusive of existing) as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed expansion project.

3.5 Socio - Economic Environment

There will be further upliftment in Socio Economic status of the people in the area. Hence, there will be further development of the area due to the proposed expansion project.

Due to this the economic conditions, the educational and medical standards of the people living in the study area will certainly move upwards which will result in overall economic development, improvement in general aesthetic environment and increase in business opportunities.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF&CC are tabulated below:

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Waste water quality				
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis.	Composite sampling (24 hourly)	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules, 1996
C.	Sanitary waste water	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules 1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (WHRB & FBC boiler stacks) Once in a month	---	PM PM, SO ₂ & NO _x
B.	Ambient Air quality (CAAQMS)	Continuous	Continuous	PM _{2.5} , PM ₁₀ , SO ₂ & NO _x
C.	Fugitive emissions	Once in a Month	8 hours	PM
3. Meteorological Data				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
	Ambient Noise levels	Twice in a year	Continuous for 24 hours with 1 hour interval	Noise levels

5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed project as there are no habitations in the additional land proposed for expansion. Hence no R & R study has been carried out.

6.0 PROJECT BENEFITS

With the establishment of the proposed project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve

due to the proposed project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

The following are air emission control systems proposed in the proposed project:

S.No.	Source	Stack height (in M)	Control Equipment	Maximum Emission at the outlet
1	DRI kilns with WHRBs	84	Electro Static Precipitators (ESP)	PM - 30 mg/Nm ³
2	Induction Furnaces with CCM	30 (3 nos.)	Fume Extraction system with bag filters	PM - 30 mg/Nm ³
3	Rolling Mill	52	Stack	---
4	FBC Boiler	54	Electro Static Precipitator for control of PM	PM - 30 mg/Nm ³ SOx - 100 mg/Nm ³ NOx - 100 mg/Nm ³

Note: Apart from the above Fume extraction system with bagfilters, dust suppression system, covered conveyers etc. will also be installed

The following air pollution control systems/ measures are proposed in the Plant:

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.

7.2 Water Environment

Closed loop cooling water system will be adopted in DRI, SMS, and Rolling Mill units. The effluent generated from Rolling Mill will be sent to settling tank & clear water will be recycled through closed circuit cooling system. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash

conditioning and for greenbelt development. Sanitary waste water will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed.

Effluent Treatment Plant:

pH of the boiler blowdown will be between 9.5 to 10.5. Hence, a neutralization tank will be constructed for neutralizing the boiler blow down. DM plant regeneration water will be neutralized in a neutralization tank. After neutralization these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). The treated effluent will be utilized for dust suppression, ash conditioning and for Green belt development. No effluent will be let out of the plant premises. Sanitary waste water will be treated in STP. There will not be any effluent discharge outside the premises. ZLD will be followed.

7.3 Noise Environment

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosure will be provided. All the machinery will be manufactured in accordance with MoEF&CC norms on Noise levels. The employees working near the noise generating sources will be provided with earplugs. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units.

7.4 Land Environment

The waste water generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with SPCB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed expansion project.

Solid waste generation and disposal

S.No.	Waste / By product	Quantity (TPA)		Method of disposal
		Existing	Proposed	
1	Ash from DRI	10,800	20,790	It is proposed to establish Fly Ash Brick manufacturing unit within the Plant & the entire Fly Ash will be utilized in making Fly Ash Bricks.
2	Dolochar	18,000	34,650	is being given to brick manufacturers. After proposed expansion it will be used as fuel in AFBC based power plant.
3	Kiln Accretion Slag	540	1,040	is being utilized in road construction and same practice will be continued after the proposed expansion also.
4	Wet Scraper Sludge	2,760	5,313	is being given to brick manufacturer and same practice will be continued after the proposed expansion also.
5	SMS Slag	---	15,300	Slag from SMS will be crushed and iron will be recovered & remaining non –magnetic material being inert nature, will be used as sub base material in road construction / used for brick manufacturing / civil construction works like PCC and wall construction
6	Dust from APCS	---	1,700	Will be being given brick manufacturers
7	Mill scales from Rolling Mill	---	3,060	Will be given to Ferro alloy manufacturing units.
8	End Cuttings	---	4,590	Will be recycled to SMS unit
9	Ash from Power Plant (using Indigenous Coal) (OR) Ash from Power Plant (using Imported Coal) (OR) Ash from Power Plant (using Dolochar+ Indigenous coal) (OR) Ash from Power Plant (using Dolochar+ Imported Coal)	--- --- --- ---	17,010 (OR) 6,804 (OR) 30,004 (OR) 24,476	It is proposed to establish Fly Ash Brick manufacturing unit within the Plant & the entire Fly Ash will be utilized in making Fly Ash Bricks.

NOTE: Solid wastes such as dolochar, accretion slag, granulated slag will be stored in designated storage yard. Ash generated will be stored in silos only. There will not be any

open storage of fly ash. All other storage yards will be on top of stable liner to avoid leaching of material to ground water.

7.5 Greenbelt Development

Greenbelt of **10 acres (4.05 Ha.)** of extensive greenbelt will be developed (inclusive of existing) in the plant premises. **10 to 85 m** wide greenbelt will be developed all around the plant.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 27 Crores

Recurring Cost per annum for Environmental protection : Rs. 2.8 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.
