

**SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

OF

VASWANI INDUSTRIES LIMITED

(Proposed Expansion of Steel Plant)
at
Sondra (V), Raipur (T & D), Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

1.0 PROJECT DESCRIPTION

VASWANI INDUSTRIES LIMITED (VIL) has obtained Consent from CECB vide 5077 / TS / CECB / 2004 dt. 14-12-2004 & 8846 / TS / CECB / 2010 dt. 27-03-2010 for establishment of DRI Kilns (Sponge Iron) - 90,000 TPA (3 x 100 TPD), Induction Furnace (Hot billets / MS Billets / Ingots) - 36,000 TPA (2 x 8 T) & Power Plant – 11.5 MW (WHRB – 9 MW & FBC – 2.5 MW).

Now as part of expansion, company proposed to enhance steel plant i.e. Induction Furnace with LRF (MS Billets / Ingots / Hot billets from 36,000 TPA to 1,50,000 TPA), New Rolling Mill unit (Re-rolled Product/Patra / Structural Steels/ Wire Rod - 1,50,000 TPA).

The proposed expansion will be taken up partly in the existing plant premises of 11.84 Ha. and partly in the additional land of 6.76 Ha. Total land will be 18.6 Ha. i.e. 45.9 Acres.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all Secondary metallurgical processing industries are listed under S.No. 3(a), under Category 'B'. The SEIAA, Chhattisgarh has accorded **Terms of Reference (TOR)** for the proposed expansion project vide letter no. **645/Industries/ Raipur/1554 dt. 28-06-2021**. 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/ 1922/ RA 0149, 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 SEIAA, Chhattisgarh. 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 expansion 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	Partly Industrial & partly barren
2.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
3.	Historical places / Places of Tourist importance / Archeological sites	Nil
4.	Critically polluted area as per MoEF&CC Office Memorandum dated 13 th January 2010	Siltara Industrial area is adjacent to the site
5.	Defence Installations	Nil
6.	Nearest village	Sondra (0.1 km from plant boundary and 0.34 Kms from main plant)
7.	No. of Villages in the Study Area	60 nos.
8.	Forests	Nil within 10 Km radius
9.	Water body	Kharun river (2.5 Kms.), Chokharanala(1.2 Kms.) & Few seasonal nalas, ponds exist within study area.
10.	Nearest Highway	Raipur – Simga State Highway - 2 kms
11.	Nearest Railway Station	Mandhar Railway Station –7.2 Kms.
12.	Nearest Port facility	Nil with in 10 Km. Radius.
13.	Nearest Airport	None within 10 Kms. [Swami Vivekananda Airport, Raipur – 22.0 Kms. (Aerial)]
14.	Nearest Interstate Boundary	Nil (Nearest interstate boundary is Odisha at a distance of 86 kms. from the plant)
15.	Seismic zone as per IS-1893	Seismic zone – II
16.	R & R	There is no rehabilitation and resettlement issue, as there are no habitations present in the additional land acquired.
17.	Litigation / court case is pending against the proposed expansion project / proposed site and or any direction passed by the court of law against the project	Nil

1.2 PLANT CONFIGURATION AND PRODUCTION CAPACITY

Following is the proposed plant configuration and proposed production capacities

EXISTING & PROPOSED PLANT CONFIGURATION & PRODUCTION CAPACITIES

S.No.	Units (Product)	Existing Operating Plant	Proposed Expansion Project	After Expansion Project	
1.	DRI Kilns (Sponge Iron)	90,000 TPA (3 x 100 TPD)	--	90,000 TPA (3 x 100 TPD)	
2.	Induction Furnace (MS Billets / Ingots)	36,000 TPA (2 x 8 T)	1,14,000 TPA (Replacement of 2 x 8 T with 2 x 10 T IF & installation of new 2 x 15 MT IF with matching LRF]	1,50,000 TPA (2 x 10 T & 2 x 15 T)	
3.	Rolling Mill with Hot Charging (Re-rolled Product / Patra / Structural Steels / Wire Rod)	--	150000 TPA (1 x 500 TPD) [1,27,500 TPA through hot charging & 22,500 TPA through reheating furnace]	150000 TPA (1 x 500 TPD) [1,27,500 TPA through hot charging & 22,500 TPA through reheating furnace]	
4.	Power plant	WHRB	9 MW	--	9 MW
		FBC	2.5 MW	--	2.5 MW

1.3 RAW MATERIAL REQUIRMENT

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

RAW MATERIAL REQUIREMENT, SOURCE & MODE OF TRANSPORT

S.No.	Raw Material	Quantity (TPA)	Sources	Mode of Transport
1.	For Steel Melting Shop (MS Billets/ Ingots) – 1,50,000 TPA			
a)	Sponge Iron	1,52,000	Own generation Open market	---- By road (through covered trucks)
b)	MS Scrap / Pig Iron	23,000	Chhattisgarh	By road (through covered trucks)
c)	Ferro alloys	3,000	Open market	By road (through covered trucks)
2.	For Rolling Mill through Hot charging (Rolled Products) – 1,50,000 TPA			
a)	Hot billets / MS Billets / Ingots	1,65,000	Own generation Open market	---- By road (through covered trucks)

S.No.	Raw Material	Quantity (TPA)	Sources	Mode of Transport
	Gasifier for Rolling mill			
b)	Coal (Indian)	5,940	SECL Chhattisgarh / MCL Orissa	By rail & road (through covered trucks)
c)	Coal (Imported)	3,800	Indonesia / South Africa / Australia	Through sea route, rail route & by road

1.4 MANUFACTURING PROCESS

1.4.1 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 2 x 10 T & 2 x 15 T Induction furnaces to manufacture Hot Billets/ M.S. Billets of 1,50,000 TPA. Either the Hot Billets produced from LRF will be directly sent to Rolling Mill without using Re-heating Furnace through Hot charging method (or) M.S. Billets / M.s. Ingots will be sent to Re-heating Furnace to reheat the Billets and then sent to Rolling Mill to manufacture Rolled Products.

1.4.5 Manufacturing of Rolled products through Rolling Mill

The Hot Billets produced from Induction Furnaces will be directly sent to Rolling Mill to produce Rolled Products (OR) Hot Billets will be cooled and stored will be sent to reheating furnaces for the heating and will be sent to Rolling Mill. Furnace will be heated with Producer gas / LDO / LSHS. A Rolling mill will be installed in the plant to produce 1,50,000 TPA of Rolled Products /TMT Bars / Structural Steels.

1.5 Water Requirement

The total water requirement after the proposed expansion project will be 1200 KLD. Water required for make up water for Induction Furnace, Rolling Mill and Domestic purpose which will be supplied by Chhattishgarh Ispat Bhumi Limited.

BREAK-UP OF WATER REQUIREMENT

S.No.	Unit	Quantity in KLD		
		Existing Plant	Proposed Expansion	Total after Expansion
1.	DRI Kilns	100	--	100
2.	Induction Furnaces	25	75	100
3.	Rolling Mill	--	150	150
4.	Gasifier	--	5	5
5.	Power Plant (FBC)	815	0	815
6.	Domestic	20	10	30
	Total	960	240	1200

1.6 Waste Water Generation

- The total wastewater generation from the proposed expansion project will be 9 KLD.
- The following will be the total wastewater generation & its break-up.

BREAKUP OF WASTE WATER GENERATION

S.No.	Source	Generation (KLD)		
		Existing Plant	Proposed expansion	Total after proposed expansion
1.	Power Plant			
	a) Cooling Tower blowdown	100	--	100
	b) Boilers blowdown	20	--	20
	c) D.M. plant regeneration water	30	--	30
2.	Gasifier	--	1	1
3.	Sanitary Wastewater	16	8	24
	Total	166	9	175

1.7 Wastewater Characteristics

The following are the Characteristics of waste water

CHARACTERISTICS OF EFFLUENT

PARAMETER	CONCENTRATION			
	Cooling Tower blowdown	DM Plant Regeneration	Boiler Blowdown	Sanitary waste water
pH	7.0 – 8.0	5.0 – 10.0	9.5 – 10.5	7.0 – 8.5
BOD (mg/l)	--	--	--	200 – 250
COD (mg/l)	--	--	--	300 – 400
TDS (mg/l)	1000	5000 – 6000	1000 mg/l	800 – 900
Oil & Grease (mg/l)	--	10	--	5 - 10
TSS (mg/l)	--	--	--	150-200

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 plant site during **1st March 2021 to 20th June, 2021**. The following are the concentrations of various parameters at the monitoring stations:

Parameter		Concentration
PM _{2.5}	:	38.6 to 52.6 µg/m ³
PM ₁₀	:	64.1 to 87.5 µg/m ³
SO ₂	:	8.9 to 25.6 µg/m ³
NO _x	:	9.1 to 33.4 µg/m ³
CO	:	715 to 1260 µg/m ³

2.2 Water Quality

2.2.1 Surface Water Quality

2 no. of samples have been collected from Kharun River which is flowing at a distance of 2.5 Kms. & 1 no. from Chokhara Nallah which is flowing at a distance of 1.2 kms. from the plant. No other samples have been collected as there is no availability of water in the seasonal streams. Surface water samples have been collected and analyzed for various physico-chemical parameters. 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 47.06 dBA to 68.77 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 likely emissions from the proposed expansion 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 expansion project will be 0.8 µg/m³ at a distance of 600 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 0.2 µg/m³.

The predicted max incremental SO₂ concentrations (24 hourly) due to the emissions from operation of proposed expansion project will be 5.6 µg/m³ at a distance of 600 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 expansion project will be 4.7 µg/m³ at a distance of 600 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 1.2 µg/m³.

The predicted incremental rise in CO concentration due to the Vehicular emission will be 0.6 µg/m³.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT

Item	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)	CO (µg/m ³)
Maximum baseline conc. in the study area	87.5	25.6	33.4	1260
Maximum predicted incremental rise in concentration due to proposed expansion project of VIL	0.8	5.6	4.7	--
Maximum predicted incremental rise in concentration due to Vehicular Emissions from the proposed expansion project	0.2	--	1.2	0.6
Net resultant concentrations during operation of the plant	88.5	31.2	39.3	1260.6
National Ambient Air Quality Standards	100	80	80	2000
The net resultant Ground level concentrations during operation of the proposed 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 expansion project will be compressors, DG set, etc. 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. 18.4 acres (7.45 Ha.) of extensive greenbelt will be developed 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

There will be no effluent discharge in the Induction Furnace as closed-circuit cooling system will be adopted. Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system. Effluent from Gasifier (1.0 KLD) will have mainly phenolic compounds and will be used in After Burning Chamber of existing DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler. Sanitary waste water will be treated in STP.

Treated sewage will be used for Greenbelt development. 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 expansion project.

3.4 Prediction of Impacts on Land Environment

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. 18.4 acres (7.45 Ha.) of extensive greenbelt will be developed 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 certain upliftment in Socio Economic status of the people in the area & 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
C.	STP Inlet & Outlet	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (all stacks) Once in a month		PM PM, SO ₂ & NO _x

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
B.	Ambient Air quality (CAAQMS)	Continuous	Continuous	PM ₁₀ , SO ₂ & NO _x
		Quarterly Once	24 hours	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x & CO
C.	Fugitive emissions	Quarterly Once	8 hours	PM
3. Meteorological Data				
A.	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
A.	Ambient Noise levels	Quarterly Once	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 acquired for proposed expansion. Hence no R & R study has been carried out.

6.0 PROJECT BENEFITS

With the establishment of the proposed expansion 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	Control Equipment	Outlet PM emission
1	Induction Furnaces with CCM (2 x 15 & 2 x 10 T)	Fume Extraction system with PTFE bag filters (4 nos.)	PM < 30 mg/Nm ³
2	Reheating furnace of Rolling Mill	Stack	PM < 30 mg/Nm ³

Apart from the above the following air emission 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

- There will be no effluent discharge in the Induction Furnace as closed-circuit cooling system will be adopted.
- Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- Effluent from Gasifier (1.0 KLD) will have mainly phenolic compounds and will be used in After Burning Chamber of existing DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
- Sanitary waste water will be treated in STP.
- There will not be any effluent discharge outside the premises. Zero discharge is being /will be followed.
- During monsoon the treated effluent from existing power plant after ensuring compliance with norms, will be used as makeup water for Rolling mill & SMS.

Hence there will not be any adverse impact on ground water / surface water due to the proposed expansion project.

7.3 Noise Environment

The major sources of noise generation in the proposed expansion project will be compressors, DG set, etc. 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

Zero effluent discharge will be adopted. 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	Quantity (TPA)		Method of disposal
		Existing	Proposed	
1.	Ash from DRI	16,200	--	Is being used in two Brick manufacturing units operating in plant premises.
2.	Dolochar	27,000	--	Is being used as fuel for FBC based Power plant.
3.	Kiln Accretion Slag	810	--	Is being utilised in road construction & used in two Brick manufacturing units operating in plant premises
4.	Wet Scraper Sludge	4,140	--	Is being utilised in road construction & used in two Brick manufacturing units operating in plant premises
5.	SMS Slag	3,600	11,400	Slag from SMS is being crushed and iron is being recovered & remaining non -magnetic material being inert by nature is used as sub base material in road construction / used in two Brick manufacturing units operating in plant premises. The same will be continued even after expansion also
6.	Mill scales from Rolling Mill	--	3,000	Will be given to neary by Ferro Alloys units.
7.	End cutting from Rolling Mill	--	4,500	Will be recycled back as Raw material in Induction Furnace
8.	Ash from Power Plant (with 100 % Indian Coal)	7,518	--	Is being used in two Brick manufacturing units operating in plant premises.
	OR			
	Ash from Power Plant	1,200	--	Is being used in two Brick manufacturing units operating in plant premises.

S.No	Waste	Quantity (TPA)		Method of disposal
		Existing	Proposed	
	(with 100 % Imported Coal)			
OR				
	Ash from Power Plant (with Dolochar + Indian Coal)	17,643	--	Is being used in two Brick manufacturing units operating in plant premises.
OR				
	Ash from Power Plant (with Dolochar + Imported Coal)	16,446	--	Is being used in two Brick manufacturing units operating in plant premises.

7.5 Greenbelt Development

Greenbelt of **18.4 Acres (7.45 Ha.)** of extensive greenbelt will be developed in the plant premises. **10 to 40 m** wide greenbelt will be developed all around the plant. 2500 plants will be planted per Hectare as per CPCB norms.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 2.7 Crores

Recurring Cost per annum for Environmental protection : Rs. 0.98 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.

- Continuous stack monitoring system is proposed for major stacks.
- Online Ambient Air Quality Monitoring Stations will be established in consultation with SPCB during operation of the plant.
- Fugitive emission monitoring will be carried out as per CPCB norms.
- Energy meters will be installed for all the pollution control systems.