SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

SHAMBHAVI ISPAT

[Expansion of Steel Plant (Category –B Project)

Expansion of Steel Plant [Establishment of new 8 x 15 T Induction Furnace, expansion of Rolling Mill from 30,000 TPA to 3,60,000 TPA (Furnace Oil / Producer Gas as fuel) and Coal Gasifier 19,800 Nm^3/Hr]

at

KHASRA NOS. 31/1, 31/2, 32/1, 32/2 & 32/3, VILLAGE GERWANI, TEHSIL & DISTRICT RAIGARH, CHHATTISGARH

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

Chhattisgarh

1.0   PROJECT DESCRIPTION

SHAMBHAVI ISPAT has obtained Consent from Regional Office, Chhattisgarh Environment Conservation Board (CECB), Raigarh vide letter no. 1072/RO/TS/CECB/2019 dt. 23.01.2019 for establishment of 30,000 TPA Rolling Mill to manufacture MS Bars and Rods (TMT Bar) at Khasra No. 32/1 & 32/2, Village Gerwani, Tehsil & District Raigarh, Chhattisgarh.

Now as a part of expansion, we proposed to establish new 8 x 15 T Induction Furnaces to produce 3,96,000 TPA of Hot billets / M.S. Billets, expansion of Rolling Mill from 30,000 TPA to 3,60,000 TPA (Furnace Oil / Producer Gas as fuel) and Coal Gasifier 19,800 Nm^3/Hr. in the phased manner.

Total land after proposed expansion will be 8.223 Ha. (20.32 acres) comprising of Khasra No. 31/1, 31/2, 32/1, 32/2 & 32/3. The project cost envisaged for the proposed expansion is Rs. 40 Crores.

As per the Ministry of Environment, Forest & Climate Change (MOEF&CC), New Delhi notification, dated 14th September, 2006 and its subsequent amendments, all the non – toxic secondary metallurgical processing industries are falling under Sl. No. 3 (a), classified as Category 'B' for the grant of Environmental Clearance at State Level. SEIAA, Chhattisgarh has accorded Terms of Reference (TOR) for the proposed expansion project vide letter no. **954/Industries/Raigarh/1167 Naya Raipur dated 28th July 2020.** The EIA Report has been prepared considering the TOR issued by SEIAA, Chhattisgarh.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, vide certificate No. NABET/ EIA/ 1922/ RA 149, for preparing EIA report for Metallurgical Unit, have prepared 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 within 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 (pertaining to site)	Land is partly Industrial & partly scrub land.
2.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	There are no notified National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve/ migratory route for Birds with in 10 Km. radius of the plant. However, movement of Elephants is observed within 10 Kms. radius of the plant, as per the secondary source. Conservation plan has been prepared.
3.	Historical places / Places of Tourist importance / Archeological sites	BanjariMata temple is situated at a distance of 4.8 Kms. from the plant.
4.	Industrial areas / cluster as per MoEF&CC Office Memorandum dated 13th January 2010 and its subsequent amendments and NGT order vide dt. 10th July 2019	Nil
5.	Defence Installations	Nil
6.	Nearest village	Village Gerwani (0.5 Kms.)
7.	Reserved Forests / Protected Forests	Taraimal RF (2.2 Kms.), Rabo RF (6.2 Kms), Urdana RF (1.7 Kms.) Pajhar PF (8.4 Kms.), Kharidungri PF (2.6 Kms.), Keradungri PF (4.4 Kms.), Dungapani PF (3.2 Kms.), Lakha PF (0.5 Kms.), Barkachhar RF (2.0 Kms.), Punjipathra PF (6.7 Kms.), etc. are exists within the study area.
8.	Water body	Kelo river (1.5 Kms.), Kokritarai Pond near Kirodimal (6.5 Kms.) & Gerwani Nala (1.9 Kms.) & Few seasonal nalas, ponds exists within the study area.
9.	Crops in the Study Area	Major Crops - Paddy, Arhar, Mung, Groundnut Minor crops - Wheat, Maize, gram, Masur, Urad etc. Horticulture crops – Lemons, Papaya, Banana, Leechie, Potato, Mango, Tomato, Onion, Cabbage, Chilly,

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
		Ginger etc.
10.	Nearest Railway station	Kirodimal Railway Station – 7.8 Kms.
11.	Nearest Highway	Raigarh – Ambikapur State Highway – 0.3 Kms.
12.	Nearest Port facility	Nil
13.	Nearest Airport	Nil (Jindal Air strip – 6.4 Kms.)
14.	Nearest Interstate Boundary	No interstate boundary within 10 Km radius of the plant site.
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 in the additional land adjoining to the existing plant. The expansion will be taken up partly in the existing plant & partly in adjoining land.

1.2 Plant Configuration and Production Capacity

The proposed Steel Plant envisages manufacturing of the following Existing & Proposed Products & Production Capacities

S.No.	Unit	CTE obtained dt. 23.10.2019 (Under Construction) (TPA)	Proposed Expansion (TPA)		After Proposed Expansion (TPA)
			Phase I	Phase II	
1.	Induction Furnace (MS Billets / Steel Ingots)	---	1,98,000 TPA (4 x 15 T)	1,98,000 TPA (4 x 15 T)	3,96,000 TPA
2.	Rolling Mill (MS Bars / Rods / TMT bars/ Wire Rod / Angle / Channel / Steel Structures)	30,000 TPA	1,65,000 TPA (1 x 500 TPD)	1,65,000 TPA (1 x 500 TPD)	3,60,000 TPA
3.	Coal Gasifier (Producer Gas)	---	9,900 NM^3/Hr	9,900 NM^3/Hr	19,800 NM^3/Hr

1.3 Raw Materials

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

S.No.	Raw Material	Quantity	Sources	Mode of Transport
1.	*For Induction Furnace (Steel Ingots / Billets) - 1,48,500 TPA*			
a)	Sponge Iron	3,30,000 TPA	Chhattisgarh & Orissa	By Road (through covered trucks)
b)	Scrap	141000 TPA	Chhattisgarh & Orissa	By road (through covered trucks)
c)	Ferro Alloys	5900 TPA	Chhattisgarh & Orissa	By road (through covered trucks)

2.	*For Rolling Mill –*				
	(MS Bars / Rods / TMT bars/ Wire Rod / Angle / Channel / Steel Structures) – 330000 TPA				
a)	Steel Ingots / Billets		353100 TPA	Own generation	----
b)	LDL/LSHS (instead of FO)		16200 TPA	Nearby HPCL / IOCL depots	Tankers
c)	Coal (for Gasifier 19,800 NM^3/Hr)	Indian Coal	66000 TPA	SECL, Chhattisgarh / MCL Odisha	By rail & road (through covered trucks)
		Imported coal	42200 TPA	Indonesia / South Africa / Australia	Through sea route & Rail

1.4 Manufacturing Process

Manufacturing of Hot Billets / M.S. Ingots / M.S. Billets through Induction Furnace

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make liquid steel which is then refined in Ladle Refining furnace and then poured into CCM to get billets. The SMS will consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). Hot billets are fed to rolling mill. In case of break down in rolling mill the cooled MS billets will be sent to re heating furnace & then fed to rolling mill.

Manufacturing of Rolled products through Rolling Mill

The Hot Billets produced in CCM will be directly sent to Rolling Mill through Hot charging method to produce Rolled Products (OR) In case of break down in rolling mill the cooled MS billets will be sent to re heating furnace & then fed to rolling mill. Re-heating Furnace will be heated with Producer Gas / LDO. A bar and round mill will be installed in the plant to produce TMT Bars / Structural Steels / Rolled Products.

1.5 Water Requirement

Water required for the existing plant is 25 KLD and after proposed expansion project water requirement will be 435 KLD. Water required for existing project is being sourced through Ground water resources. Water required for the expansion project will be 410 KLD and same will be sourced through Ground water resources. Water permission for the additional quantity of water will be obtained and it under the process. The following is the break-up of the water requirement during operation of expansion project.

Break-up of Water requirement

S.No.	Unit	Quantity in KLD		
		Existing Plant	Proposed Expansion	Total after Expansion
1.	Induction Furnaces	--	160	160
2.	Rolling Mill with Gasifier	18	230	248
3.	Make up water for scrubber	2	10	12
4.	Domestic	5	10	15
	Total	**25**	**410**	**435**

1.6 Waste Water Generation

In the existing project, the wastewater generated from the proposed unit is being sent to Settling pond and is recycled again as closed circuit cooling system is provided. The same will be followed after proposed expansion project. Sanitary waste water generation from existing & expansion projects will be **12 KLD** and will be treated in STP. The treated sewage will be utilized for Greenbelt development after ensuring compliance with the norms.

1.7 Wastewater Characteristics

PARAMETER	Sanitary waste water untreated
pH	7.0 – 8.5
BOD (mg/l)	200 – 250
COD (mg/l)	300 – 400
TDS (mg/l)	800 – 900

2.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, soil quality, 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 $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during **1st October 2020 to 31st December 2020**. The following are the concentrations of various parameters at the monitoring stations:

Table No. 11.1.6: Baseline Data

Parameter		Concentration
$PM_{2.5}$	:	26.9 to 47.7 $\mu g/m^3$
PM_{10}	:	47.3 to 88.2 $\mu g/m^3$

SO$_2$	:	9.4 to 26.6 µg/m^3
NO$_X$	:	12.2 to 39.2 µg/m^3
CO	:	516 to 1497 µg/m^3

2.2   Water Quality

2.2.1   Surface Water Quality

Three (4) nos. of Surface water samples have been collected, 1 no. of surface water sample have been collected each from Kelo river (1.5 Kms.), from Kokritarai Pond near Kirodimal (6.5 Kms.) & Gerwani Nala (1.9 Kms.) to assess surface water quality. 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 **46.57 dBA to 62.94 dBA.**

3.0   ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1   Prediction of impacts on air quality

The likely emissions from the proposed expansion project are PM$_{10}$, NOx & 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 PM$_{10}$concentrations (24 hourly) due to the proposed expansion project will be 1.1 µg/m^3 at a distance of 800 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in Particulate Matter concentration due to the Vehicular emission will be 0.4 µg/m^3.

The predicted max incremental SO_2 concentrations (24 hourly) due to the proposed expansion project will be 8.3 $\mu g/m^3$ at a distance of 800 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NOx concentrations (24 hourly) due to the proposed expansion project will be 7.18 $\mu g/m^3$ at a distance of 800 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NOx concentration due to the Vehicular emissions will be 2.78 $\mu g/m^3$.

The predicted incremental rise in CO concentration due to the Vehicular emission will be 1.87 $\mu g/m^3$.

The net resultant concentrations (Maximum baseline conc. + predicted incremental rise in conc.) of PM, NO_X & CO are shown in Table below by considering the emissions from other industries in the area will be well within the National Ambient Air Quality Standards (NAAQS) when the expansion project commences the operation. Hence there will not be any adverse impact on air environment due to the proposed expansion.

Net Resultant maximum concentrations due to the proposed expansion project

Item	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)	CO ($\mu g/m^3$)
Maximum baseline conc. in the study area	88.2	22.8	41.5	1502
Maximum predicted incremental rise in concentration due to proposed expansion project (Point Sources)	1.1	8.3	7.18	Nil
Maximum predicted incremental rise in concentration due to proposed expansion project (Vehicular emissions)	0.4	Nil	2.78	1.87
Net resultant concentrations during operation of the expansion project	**89.7**	**31.1**	**51.46**	**1503.87**
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 noise generating sources are Furnaces & DG set. Silencer will be provided to the DG Set. The ambient noise levels will be within the standards prescribed by MoEF&CC i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. **7.63 acres** of extensive greenbelt development covering more than 1/3rd of the total area helps in further attenuating 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

In the existing project, The wastewater generated from the proposed unit is being sent to Settling pond and is recycled again as closed circuit cooling system is provided. The same will be followed after proposed expansion project. Zero liquid effluent discharge system will be followed in expansion project also. Sanitary waste water generation due to existing & expansion units will be **12 KLD** and will be treated in STP. The treated sewage will be utilized for Greenbelt development & Dust suppression.

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 / CECB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. **7.63 Acres** of greenbelt (inclusive of existing) 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 Prediction of Impacts on Biological Environment

- There are no National Parks, Wild life Sanctuaries and Bird Sanctuaries within 10 Km. radius of the plant site. The area is known to have Elephant movement. Conservation plan has been prepared and budget of Rs. 43.70 Lakhs is allocated for implementation of Conservation plan within 5 years.
- Taraimal RF (2.2 Kms.), Rabo RF (6.2 Kms), Urdana RF (1.7 Kms.) Pajhar PF (8.4 Kms.), Kharidungri PF (2.6 Kms.), Keradungri PF (4.4 Kms.), Dungapani PF (3.2 Kms.), Lakha PF

(0.5 Kms.), Barkachhar RF (2.0 Kms.), Punjipathra PF (6.7 Kms.), etc. are exists within the study area.

- All the required Air emissions control systems in the expansion project will be installed and operated to comply with MOEF/CPCB/CECB norms.
- Zero liquid effluent discharge is followed in the existing plant and similar practice will be continued after expansion also.
- All solid waste disposal will be in accordance with the norms.
- Extensive Greenbelt of **7.63 acres (inclusive of existing)** will be developed in the plant premises.

When all norms are complied and with proper implementation of Environment Management Plan, there will not be any adverse impact on flora & Fauna due to the proposed expansion.

3.6 Socio - Economic Environment

There will be lot of opportunities in employment to local people during construction as well as in operation phase. There will be further upliftment in Socio Economic status of the people in the area. Socioeconomic developmental activities will be taken up in consultation with the village panchayat. Hence there will be further development of the area due to the proposed expansion project.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of CECB 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	Monitored on quarterly basis.	Grab sampling	As per IS: 10500
B.	STP inlet & Outlet	Once in a month	composite sampling	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors Once in a month		PM PM, SO_2& NOx
B.	Ambient Air quality	Once in a month	24 hours	$PM_{2.5}$, PM_{10}, NOx& CO

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
			continuously	
C.	Fugitive emissions	Quarterly basis	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 basis	Continuous for 24 hours with 1 hour interval	Noise levels

5.0   ADDITIONAL STUDIES

No rehabilitation and resettlement is required as there are no habitations exist in the additional land earmarked for the expansion project which is adjoining to the existing plant.

6.0   PROJECT BENEFITS

With the establishment of the proposed expansion project, employment potential will increase. The economic status of the people in the area will further improve due to the expansion project. Top priority will be given to locals in employment. A separate budget will be allocated for Social welfare activities which will be implemented in the village in consultation with village panchayat. These activities will help in contributing to the development of villages in the nearby areas.

7.0   ENVIRONMENT MANAGEMENT PLAN

7.1   Air Environment

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

S.No.	Stack attached to	No. of Stacks	Control Equipment	Particulate emission at the outlet
1.	Induction Furnaces 4 x 15 T	2 nos. (Combined stack with twin flues)	Fume extraction system followed by Bag filter	< 30 mg/Nm^3
2.	Induction Furnaces 4 x 15 T	2 nos. (Combined stack with twin flues)	Fume extraction system followed by Bag filter	< 30 mg/Nm^3
3.	Rolling Mill (1 x 500 TPA)	1 no.	Scrubber	< 25 mg/Nm^3

4.	Rolling Mill (1 x 500 TPA)	1 no.	Scrubber	< 25 mg/Nm^3

> ➤ 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 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 generation from the expansion project for as closed circuit cooling system will be adopted. Sanitary waste water will be treated in STP. Treated sewage will be utilised for greenbelt development.

7.3   Noise Environment

The major sources of noise generation in the proposed expansion project will be Furnaces & DG set, etc. Silencer will be provided to D.G. set. 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. **7.63 acres** of greenbelt developed (inclusive of existing) in the plant premises will help in attenuating the noise levels further.

7.4   Land Environment

There will be no effluent generation from the manufacturing process as closed circuit cooling system will be adopted. Sanitary waste water will be treated in STP. Solid wastes will be disposed off as per norms. 7.**63 acres** of greenbelt development within the plant premises. Hence there will not be any impact due to the proposed expansion project.

Solid waste generation and disposal

following will be the solid waste generation & proposed method of disposal.

S.No.	Waste/ by product	Existing (Under Implement.) In TPD	Proposed Expansion (TPD)	Method of disposal
	Induction Furnace			
1	Slag	---	120	Slag from SMS will be crushed and iron will be recovered & remaining non-magnetic

				material being inert by nature will be used as sub base material in road construction / will be given to brick manufacturers.
	Rolling mill			
2	Mill scales	1.2	12	Mill scales will be given to nearby Ferro alloys manufacturing units or casting units.
3	End Cuttings	3.8	38	Recycled back as raw material in own induction Furnaces
	Gasifier			
4	Cinder	---	90	Will be given to brick manufacturing units
5	Tar	---	4.2	Will be given to coal tar recyclers / agencies engaged in construction activities / given to nearby Pellet plant units

Note:
Solid wastes such as slag will be stored in designated storage yard. All stock piles will be made on top of a stable liner to avoid leaching of materials to ground water.

7.5   Greenbelt Development

7.63 Acres of greenbelt developed (inclusive of existing) within the existing plant premises covering more than 1/3rd of the total area.

7.6   Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant   : Rs. 3.45 Crores

Recurring Cost per annum for Environmental protection   : Rs.38.5 Lakhs

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