Executive Summary

of

Rapid Environmental Impact Assessment report

for

MSP Sponge Iron Limited

Village: Manuwapali

Tehsil & District: Raigarh

Chhattisgarh

By

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1.0   INTRODUCTION

MSP Sponge Iron Ltd. has proposed to go for expansion of their Ferro Alloys and CFBC based Power Plant in Village: Manuwapali, Tehsil & District: Raigarh in the state of Chhattisgarh. The proposed expansion will be taken up in 55.78 acres of land. The following are products and capacities proposed of the proposed expansion.

S.No	Unit	Existing Production capacity	Expansion Production capacity	Total production after expansion
1	Submerged Electric Arc Furnaces (Ferro alloys) SiMn FeMn	15174 TPA 11483 TPA	*69300 TPA *92475 TPA	84474 TPA 103958 TPA
2	Captive power plant	12 MW	**50 MW	62 MW

*   **through 5 x 9 MVA Submerged electric arc furnaces**
**   **through CFBC boilers.**

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, have prepared Draft Environmental Impact Assessment (DEIA) report for the proposed expansion Ferro alloys & Power Plant by incorporating the Terms Of Reference approved by Ministry of Environment & Forests, New Delhi. The report contains detailed description of the following

a. Characterization of status of environment with in an area of 10 Km. radius from the plant site for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.

b. Assessment of air emissions, liquid waste and solid waste from the proposed expansion project along with the noise level assessment.

c. Pollution control measures proposed to be adopted in the proposed expansion project.

d. Environmental Management Plan(EMP)

2.0   PROJECT DESCRIPTION

 ➤ The plant is located at Manuwapali Village, Raigarh Tehsil District, Chhattisgarh

 ➤ Manuwapali is the nearest habitation at a distance of 0.5 Km. from the plant site.

 ➤ There are no National Parks, Wild life Sanctuaries and Bird Sanctuaries within 10 Km radius of the plant site.

 ➤ Nearest Railway Station is Jamgaon RS situated at 1.5 Kms. from plant site.

 ➤ Kur nallah / Sapnai river is situated at distance of 1.5 Kms. / 3.9 Kms from the site respectively, which also a water source for the proposed plant site.

- Following are Reserve Forests/Protected Forests situated within 10 Kms. radius of the site: Koalibahal PF, Sukhadongri RF, Chuhapali PF, Sikosimal PF, Chitkikharu RF, Koilanga PF, Barrampia PF, Kukurda RF, Mauhapali PF, Jhariadipa RF, Saraipali PF, Bhagora PF, Kumbahal PF, Sambalpuri PF, Balbhadarpur PF, Salheona PF.
- No habitation in the proposed site.
- The following industries are situated in 10 Kms. radius:

TABLE 2.1
INDUSTRIES WITHIN 10 KM RADIUS

S.No.	NAME OF THE INDUSTRY	TYPE
1.	M/s. Maa Shakambari Steel (P) Ltd.	Steel & Power Plant
2.	M/s. Shiva Shakti Steel Pvt. Ltd.	Steel Plant
3.	M/s. Mangla Ispat (P) Ltd.	Steel & Power Plant
4.	M/s. Ind Synergy Ltd.	Steel Plant
5.	M/s. MSP Steel & Power Ltd.	Steel Plant
6.	M/s. R.R. Energy (P) Ltd.	Steel Plant

3.0   DETAILS OF PROJECT
3.1   RAW MATERIALS

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

1)   For Silico Manganese

S.No.	Item	Quantity (TPA)	Source
1	Mn Ore	71550	MOIL / Open Market
2	Mn slag	40500	In house
3	Quartz	17550	Local Market
4	Pet Coke	7125	Local Market

2)   For Ferro Manganese

S.No.	Item	Quantity (TPA)	Source
1	Mn Ore	120250	MOIL / Open Market
2	Pet coke	69250	Local Market
3	MS Rounds	4625	Local Market
4	Electrode paste	13875	Local Market

3)   For Power Plant (50 MW)

S.No.	Item	Quantity (TPA)	Source
1.	Coal		
	Domestic	325000	SECL, Bilaspur
		or	
	Imported	199000	Imported coal

All major raw materials will be transported by Rail rakes, through a railway siding situated at M/s. MSP Steel & Power Ltd. (adjacent to the proposed plant)

3.2   MANUFACTURING PROCESS

3.2.1   FERRO ALLOYS

Ferro manganese or Silicon-manganese will be produced using Manganese ore in a Sub-merged arc furnace using reducer (Pet Coke) and flux (dolomite/quartz) under high voltage.

3.2.2   POWER GENERATION

Coal will be used in CFBC Boilers to generate 50MW electricity. The flue-gases will be treated in high efficiency ESP and then discharged through a stack (with twin flues) of 90 m height. The outlet dust emission will be less than 50 mg/Nm^3.

3.3   WATER REQUIREMENT

The proposed Ferro alloys & Power Plant requires about 1350 cum/day of water. The water requirement for the proposed expansion will be met from Kur Nallah / Sapnai River which is situated at a distance of 1.5 Kms./ 3.9 Kms respectively from the site. Air cooled condenser are proposed instead of water cooled condenser in the proposed project. This will help in reducing the water consumption drastically. Water drawl Permission will be obtained from water resources department, Govt. of Chhattisgarh.

WATER REQUIREMENT

S.No	SOURCE	QUANTITY (Cum / day)
1	Ferro Alloys	
	Make up water for Ferro alloys	150
2	Power plant	1192
	i) Cooling tower make-up	1072
	ii) Boiler make up	110
	iii) DM plant regeneration	10
3	Domestic	8
Total		**1350**

3.4 WASTE WATER GENERATION

The total effluent quantity expected from the proposed expansion project will be 168.4 cum/day. Closed circuit cooling system will be implemented in ferro alloys plant and this will result in lower water consumption and there will not be any effluent generation from the process & cooling from Ferro alloys. The effluent generated from power plant will be mainly Boiler blow down, cooling tower blow down, DM plant regeneration & sanitary waste water.

WASTE WATER GENERATION

SOURCE	QUANTITY (in Cum / day)
Cooling tower blowdown	130
Boiler make up	22
DM plant regeneration	10
Domestic	6.4
Total	**168.4**

3.5 WASTE WATER CHARACTERISTICS

The following are the Characteristics of the effluents generated from different sources.

CHARACTERISTICS OF EFFLUENT

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
TDS (mg/l)	5000 – 6000	1000	800 - 1000	800 - 900
COD (mg/l)	--	--	--	300 – 400
BOD (mg/l)	--	--	--	200 - 250

4.0 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.

4.1 Ambient Air Quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2 & NOx at 8 stations including plant site for one season as per MoEF guidelines. The following are the concentrations of various parameters at the monitoring stations.

Parameter		Concentration
$PM_{2.5}$	:	14.3 to 28.1 $\mu g/m^3$
PM_{10}	:	23.6 to 54.6 $\mu g/m^3$
SO_2	:	5.1 to 12.4 $\mu g/m^3$

NO$_X$	:	6.2 to 16.9 μg/m^3

* PAH in PM$_{10}$ were analyzed and their concentrations at all monitoring Stations are below Detectable level.

4.2 Water Quality

Ground water samples were collected at 8 stations along with surface water samples and analysed for various Pysico-Chemical parameters. The water samples are within the permissible limits of IS: 10500 & IS: 2296.

4.3 Noise levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from 43.35 dBA to 52.00 dBA.

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Prediction of impacts on air quality

The likely emissions from the proposed Plant are PM$_{10}$, SO$_2$, NO$_X$. The predictions of Ground level concentrations have been carried out using ISCST3. 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 emissions from other industries in the area have also been considered to assess the air quality status during the operation phase of the plant.

It is observed from the computation results that the maximum predicted incremental rise in 24 hourly ground level concentrations of PM$_{10}$, SO$_2$ and NO$_X$ during operation of plant and the other industries in the area are 0.8 μg/m^3, 2.2 μg/m^3 and 8.9 μg/m^3 respectively at a distance 1350 m in the down wind direction.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE PROPOSED EXPANSION PROJECT

Item	PM$_{10}$ (μg/m^3)	SO$_2$ (μg/m^3)	NO$_X$ (μg/m^3)
Maximum baseline conc. in the study area	54.6	12.4	16.9
Maximum predicted incremental rise in concentration due to **MSP Sponge Iron Ltd.**	0.8	2.2	8.9
Maximum predicted incremental rise in concentrations due to other industries in the area	2.4	10.3	7.9
Net resultant concentrations during operation of the expansion project	57.8	24.9	33.7
National Ambient Air Quality Standards	100	80	80

The predicted results shows that the net resultant concentration (max. baseline conc. + max. incremental rise in conc.) of PM_{10}, SO_2 and NO_X will be well within the National Ambient Air Quality Standards after commissioning of proposed expansion project. Hence there will not be any adverse impact on air environment due to the proposed Plant.

5.2   Prediction of impacts on noise quality

The major sources of noise generation in the proposed Plant will be STG, compressors, etc. The ambient noise levels will be with in the standards prescribed by MOE&F 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. 20.0 acres of extensive greenbelt inclusive of existing will be proposed to be developed in the Plant premises to further attenuate the noise levels. Hence there will not be any adverse impact due to noise on the environment in surrounding areas due to the proposed project.

5.3   Prediction of impacts on Water Environment

Closed circuit cooling system will be implemented in Ferro alloys plant and this will result in lower water consumption and there will not be any effluent generation from the process & cooling. The effluent generated will be from power plant activities which include Boiler blow down, cooling tower blow down, DM plant regeneration and this will be treated in Effluent treatment plant. This treated effluent after ensuring compliance with norms of CECB/CPCB for onland for irrigation, will be used for dust suppression, ash conditioning & for greenbelt development. Zero effluent discharge will be adopted in the proposed expansion project.

Sanitary waste water will be treated in septic tank followed by soak pit. Rain water harvesting will be implemented in consultation with Central Ground Water Board. This will help in improvement of ground water table in the area. Water drawl Permission will be obtained from water resources department, Govt. of Chhattisgarh. Hence there will not be any adverse impact on water quality in the study area due to the proposed project.

5.4   Prediction of Impacts on Land Environment

The effluent will be treated to achieve CECB standards for on land for irrigation. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to meet CPCB/CECB norms. All solid wastes will be disposed / utilized as per CPCB/CECB norms. Hence there will not be any adverse impact on land environment due to the proposed expansion project.

5.5   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 an upliftment in Socio Economic status of the people in the area.

Regular medical check ups will be conducted in the village. Hence there will be further development of the area due to the proposed Plant.

6.0   ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of CECB and MoEF are tabulated below.

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. **Water quality**				
	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis.	Grab sampling	As per IS: 10500
	Waste water quality			
	Effluent at the outlet of the ETP	Twice in a month	Grab sampling	As per EPA Rules, 1996
2. **Air Quality**				
A.	Stack Monitoring	Online monitoring (for CFBC Boiler stack)		SPM
		Once in a month		SO_2 & NOx
B.	Ambient Air quality	Twice a week	24 hours continuously	$PM_{2.5}$, PM_{10}, SO_2, NOx & CO
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	

7.0   PROJECT BENEFITS

The local areas will be benefited by way of generation of employment opportunities, increased demand for local products and services. There will be an overall improvement in the income level of the local people.

The project creates employment to about 200 persons once the plant is commissioned and for 500 persons during construction stage. Priority will be given to locals for Semi-Skilled and Unskilled workers. With the development of this plant there will be lot of scope for more industrial investments which in turn will benefit the nation.

8.0 ENVIRONMENT MANAGEMENT PLAN

8.1 Air Environnent

S.NO.	UNIT	AIR POLLUTION CONTROL SYSTEM
1.	CFBC Boiler	Electro Static Precipitator
2	Submerged Arc Furnace	Fume Extraction system with bag filters

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

➤ 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.

➤ All the required Air pollution control measures will be strictly implemented so that the ambient air quality will be with in the National Ambient Air Quality standards during the operation of the plant.

➤ Extensive greenbelt proposed to be developed will help in further mitigating the air emissions.

8.2 WATER ENVIRONMENT

Waste water generated from the proposed Plant will be treated in Effluent Treatment Plant and fully reused within the plants/premises. Zero discharge system is being adopted in existing plant, similar pattern will be maintained after expansion also.

EFFLUENT TREATMENT PLANT

The effluent generated from the proposed Plant will be treated in the following manner.

pH of the boiler blowdown will be between 9.5 to 10.5 & that of DM Plant regeneration will be between 4 to 10. Hence a neutralization tank will be constructed for neutralizing the boiler blow down & DM plant regeneration water. After neutralization these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). Part of this treated effluent will be utilised for dust suppression, partly for ash conditioning and the remaining will be utilized for green belt development. A dedicated pipe distribution network will be provided for using the treated effluent for onland for irrigation. Sanitary waste water will be treated in Septic tank followed by soak pit. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented in expansion also.

8.3   SOLID WASTE GENERATION & DISPOSAL

S.No	Solid waste	Quantity (TPD)	Disposal
1.	Ash from Power Plant (Indian Coal)	487.5	Ash utilization will be in accordance with the MoEF Notification on fly ash utilization. Ash will be utilized in the cement plant proposed by the company/given to cement plants / Brick manufacturers
	Or		
	Ash from Power Plant (Imported Coal)	67	
2.	Slag generation from Ferro Alloys manufacturing		
	a) Ferro manganese	250	To be used in manufacture of silico manganese as it contains high MnO_2 and silicon.
	b) Silico manganese	189	To be used for road construction

8.4   Noise environment

The major sources of noise in the proposed Plant will be STG, DG set & compressors. The employees working near the noise generating sources will be provided with earplugs. Noise absorbing materials will be used in the construction of roofs, walls and floors. 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. Training will be imparted to plant personnel to generate awareness about the damaging effects of noise.

8.5   Land Environment

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

8.6   GREENBELT DEVELOPMENT

20.0 acres of greenbelt (inclusive of existing greenbelt belt) will be developed in the plant premises. Greenbelt will be developed as per CPCB guidelines. 15 m wide greenbelt will be developed along the periphery of the plant. Capital cost for environment protection is Rs. 14.0 Crores.

8.7   IMPLEMENTATION OF CREP RECOMMENDATIONS

All the CREP recommendations will be strictly followed in the proposed expansion.

8.8   POST PROJECT ENVIRONMENTAL MONITORING

Ambient Air Quality, Stack monitoring & effluent analysis will be carried out regularly as per CPCB norms and the analysis reports shall be submitted to MoEF & CECB regularly.

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