



Mars Power & Steel Limited

Daft REIA Report for
Ferro Alloys and Power Plant

SUMMARY ON
ENVIRONMENTAL IMPACT ASSESSMENT
REPORT
OF

Mars Power & Steel Ltd.

Village : Baihamura
Tehsil : Ghargoda
District : Raigarh



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Executive Summary

1.0 INTRODUCTION

Mars Power & Steel Ltd. has proposed to install a Ferro Alloys unit by installing of 2 x 9 MVA units to manufacture Ferro Silicon of 12,672 TPA, Ferro Manganese of 37,000 TPA, Silico Manganese of 28,494 TPA and a CFBC based Power Plant of 35 MW capacity in Village Baihamura, Tehsil Ghargoda, District Raigarh in the state of Chhattisgarh. 46.05 acres of land is envisaged for the installation of proposed plant; out of which 26.17 Acres of land is purchased/Agreemented and rest of land is under acquisition. The following are products and capacities proposed of the proposed project.

S.No	Details	Plant Configuration	Production Capacity
1	Ferro Alloys	2 X 9 MVA	
	a Ferro silicon		12,672 TPA
	b Silico manganese		28,494 TPA
	c Ferro manganese		37,000 TPA
2	Power generation (through CFBC Boiler)	1 x 35 MW (140 TPH)	35 MW

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is Accredited by NABET, Quality Council of India for conducting EIA studies for Ferro Alloys manufacturing unit and Power Plants have prepared Draft Environmental Impact Assessment (DEIA) report for the proposed Ferro alloys



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& 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 project 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 project along with the noise level assessment.
- c. Pollution control measures proposed to be adopted in the proposed Plant.
- d. Environmental Management Plan (EMP) along with Environmental Monitoring Program.

2.0 PROJECT DESCRIPTION

- The proposed project area does not fall under the industrial areas / clusters, which are listed in MoEF office memorandum dated 13th January 2010.
- Kharamura is the nearest habitation at a distance of 0.6 Km from the site.
- There are no National Parks / Wild life Sanctuaries within 10 Km radius.
- No forest land is involved in the proposed site.
- No Rehabilitation and resettlement is required.



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- Kurket River is at a distance of 2.0 Kms from the site which is the source of water for the Project and Khalmura Nala is at a distance of 0.8 Km from the site.
- Kurket, Chhindpani, Bhengari, Pajhar, Punjpath, Nawagarh, Chhirbana and Amaghat are the Protected Forest situated within 10 Km. radius.
- Suhai, Samaruma, Taraimal and Marpahar are the Reserve Forest situated within 10 Km. radius of the site
- No habitation in the proposed site.

- The following industries are situated in 10 Km. radius:

TABLE 2.1 : Industries within 10 km radius

S.No.	NAME OF THE INDUSTRY	TYPE
1.	M/s Rameshwaram Steel Private Limited	Steel Plant
2.	Jindal Industrial Park	Industrial Park

3.0 DETAILS OF PROJECT

3.1 RAW MATERIALS

The raw materials required for the proposed project are Manganese ore, quartz, pet coke, MS scrap, electrode paste and coal (Indigenous/Imported).

1) For Ferro Silicon

S.No.	Item	Quantity (TPA)	Source	Mode of Transportation
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1	Quartz	15200	Local Market	Covered trucks
2	Pet coke	5040	Local Market	Covered trucks
3	M.S Scraps	310	Local Market	Covered trucks
4	Electrode paste	750	Local Market	Covered trucks

2) For Silico Manganese

Sr. No.	Item	Quantity	Source	Mode of Transportation
1	Mn Ore	28620 TPA	MOIL / Open Market	By Rail up to the nearest railway station & by Covered trucks
2	Mn slag	16200 TPA	In house	Covered trucks
3	Quartz	7020 TPA	Local Market	Covered trucks
4	Pet Coke	2850 TPA	Local Market	Covered trucks

3) For Ferro Manganese

Sr. No.	Item	Quantity	Source	Mode of Transportation
1	Mn Ore	48100 TPA	MOIL / Open Market	By Rail upto the nearest railway station & by Covered trucks
2	Pet coke	27700 TPA	Local Market	Covered trucks
3	MS Scrap	1850 TPA	Local Market	Covered trucks
4	Electrode paste	5550 TPA	Local Market	Covered trucks

4) For Power Plant (35 MW)

Sr. No.	Item	Quantity	Source	Mode of Transportation
1.	Coal			
i.	Domestic	168000 TPA	SECL, Bilaspur	Railway rakes & by Covered trucks
ii.	Imported	103000 TPA	Imported	Sea route , rail rakes & by covered trucks

Note: We do here by confirm that only Pet coke will be used and no char will be used.



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3.2 MANUFACTURING PROCESS

3.2.1 Ferro Alloys:

Ferro manganese or Silicon manganese or Ferro silicon are produced using manganese ore in a sub-merged arc furnace using reducer and flux under high voltage.

3.2.2 Power Generation

Coal (Indian / Imported) will be used in CFBC Boiler to generate 35MW electricity. CFBC Boiler will emit lower SO₂ and NO_x emissions. The flue-gases will be treated in high efficiency ESP and then discharged through stack of 72 m height. The outlet dust emission will be less than 50 mg/Nm³.

3.3 Water Requirement

The proposed project requires about 3420 M³/day of water. This includes Make-up water for Submerged EAF, Power Plant and Domestic water. The water requirement for the proposed project will be met from Kurket river which is situated at a distance of 2.0 Km from the project site. Water permission letter from Water Resources department, Govt. of Chhattisgarh has already been obtained.



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WATER REQUIREMENT

S.No	SOURCE	QUANTITY (Cum / day)
1	Ferro Alloys	
	Make up water for Ferro alloys	50
2	Power plant	3360
	i) Cooling tower blowdown	3026
	ii) Boiler make up	300
	iii) DM plant regeneration	34
3	Domestic	10
	Total	3420

3.4 WASTE WATER GENERATION

The total effluent quantity expected from the proposed project will be 556 cum/day. Closed circuit cooling system will be implemented 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 mainly Cooling tower blowdown, Boiler blow down, DM plant regeneration & Sanitary waste water.

WASTE WATER GENERATION

SOURCE	QUANTITY (in Cum / day)
Cooling tower blowdown	454
Boiler make up	60
DM plant regeneration	34
Domestic	8
Total	556

3.5 WASTE WATER CHARACTERISTICS

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



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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 proposed site.

4.1 Ambient Air Quality

Ambient air quality was monitored for PM_{2.5}, PM₁₀, SO₂ & NO_x at 8 stations including project 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}	:	17.9 µg/m ³ to 23.5 µg/m ³
* PM ₁₀	:	29.2 µg/m ³ to 35.0 µg/m ³
SO ₂	:	5.5 µg/m ³ to 7.8 µg/m ³
NO _x	:	6.7 µg/m ³ to 9.3 µg/m ³

* PAH in PM₁₀ 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 analyzed for various Pysico-Chemical parameters. The water samples are within the permissible limits of BIS: 10500 & BIS: 2296.



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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 41.35 dB (A) to 46.89 dB (A).

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Prediction of impacts on air quality

The likely emissions from the proposed Plant are PM₁₀, SO₂, 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 PM₁₀, SO₂ and NO_x during operation of plant and the other industries in the area are 0.5 µg/m³, 3.0 µg/m³ and 1.3 µg/m³ respectively at a distance 970 m in the down wind direction.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE PROJECT

Item	PM ₁₀	SO ₂	NO _x
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	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
Maximum baseline conc. in the study area	35.0	7.8	9.3
Maximum predicted incremental rise in concentration due to Mars Power & Steel Ltd.	0.5	3.0	1.3
Maximum predicted incremental rise in concentrations due to other industries in the area	1.6	4.1	2.5
Net resultant concentrations during operation of the plant	37.1	14.9	13.1
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 Plant. 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 within 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 dB (A) during day time and less than 70 dB (A) during night time. 15.50 acres of extensive greenbelt will 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.



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5.3 Prediction of impacts on Water Environment

Closed circuit cooling system will be implemented 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 Cooling tower blow-down, Boiler 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 will be used for dust suppression, ash conditioning & for greenbelt development. Zero effluent discharge will be adopted in the proposed plant.

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 has already been obtained from Water Resources Department, Govt. of Chhattisgarh. Hence there will not be any adverse impact on water quality or quantity due to the proposed Plant.

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



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emission control systems will be provided to comply with 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 Plant.

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 checkups 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			



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	Effluent at the outlet of the ETP	Twice in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
	Sanitary waste water	Twice in a month	Composite sampling (24 hourly)	As per EPA Rules 1996
2. Air Quality				
A.	Stack Monitoring	Online monitoring (CFBC Boiler stack)		SPM
		Once in a month		SO ₂ & NO _x
B.	Ambient Air quality	Twice a week	24 hours continuously	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 proposed project site.	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 150 persons once the plant is commissioned and for 400 persons during construction stage. Priority will be given to locals for Semi-Skilled and Unskilled workers. With the development



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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 Environment

S. NO.	UNIT	AIR POLLUTION CONTROL SYSTEM
1.	CFBC Boiler	Electro Static Precipitator
2	Submerged Arc Furnaces (2 Nos.)	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 emission 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



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Waste water generated from the proposed Plant will be treated in Effluent Treatment Plant and fully reused within the plants/premises. Zero discharge system will be adopted.

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 taken to a Central Monitoring Basin (CMB) along with Cooling tower blowdown. Part of this treated effluent will be utilized for dust suppression, part of it for ash conditioning and the remaining will be utilized for green belt development within the premises. A dedicated pipe distribution network will be provided for using the treated effluent. 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.

8.3 SOLID WASTE GENERATION & DISPOSAL

S.No	Solid waste	Quantity (TPD)	Disposal
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1.	Ash from Power Plant (with domestic coal)	252	Fly ash disposal will be in accordance with MOEF Notification on fly ash utilization. Will be given to nearby cement plants / Brick manufacturers/back filling in abandoned mines
	Ash from Power Plant (with imported coal)	35	Will be given to nearby cement plants / Brick manufacturers/back filling in abandoned mines
2.	Slag generation from Ferro Alloys manufacturing		
	a) Ferro Manganese	30	To be used in manufacture of silico manganese as it contains high MnO ₂ and silicon.
	b) Silico Manganese	75.6	To be used for road construction
	c) Ferro Silicon	12.7	Will be given to cast iron foundries.

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



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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

15.50 acres of greenbelt 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. 10.0 Crores.

8.7 IMPLEMENTATION OF CREP RECOMMENDATIONS

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

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.
