SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

KJSl Coal & Power Pvt. Ltd.

Village   :   Dhatura
Tehsil   :   Khatghora
District   :   Korba

Submitted to:

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Raipur, Chhattisgarh

1.0   INTRODUCTION

KJSL Coal & Power Pvt. Limited is an established unit having 1.2 MTPA of Coal washery unit. Now as a part of expansion, they proposed to install 5 x 9 MVA Submerged Arc furnaces to produce Ferro Alloys consisting of Ferro Silicon 33750 TPA, Ferro Manganese 75,000 TPA, Silico Manganese 65,600 TPA and a CFBC based Power Plant of 50 MW in Village – Dhatura, Tehsil – Pali, District – Korba in the state of Chhattisgarh. 80.23 Acres of land has been identified for the proposed project, out of which 54.45 Acres of land has already been acquired by the KJSLCPPL while rest 25.78 Acres is identified will be purchased shortly. The following are products and capacities proposed of the proposed project.

Sr. No.	Details	Production capacity		
		Existing	**Proposed**	**After Expansion**
1.	Washed Coal (Coal Washery)	1.2 MTPA	---	1.2 MTPA
2.	Ferro Alloys	---	5 x 9 MVA	5 x 9 MVA
a.	Ferro Silicon	---	33,750 TPA	33,750 TPA
b.	Silico Manganese	---	65,600 TPA	65,600 TPA
c.	Ferro Manganese	---	75,000 TPA	75,000 TPA
3.	Power generation (through CFBC Boiler)	---	1 x 50 MW	50 MW

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, have prepared Draft Environmental Impact Assessment (DEIA) report for the proposed Ferro alloys & Power Plant by incorporating the Terms of Reference approved by Ministry of Environment & Forests, Government of India, 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.

➢ Datura is the nearest habitation at a distance of 0.6 Km from the plant site.

➢ There are no National Parks / Wild life Sanctuaries within 10 Km radius of the plant site.

➢ No forest land is involved in the proposed site.

➢ No Rehabilitation and resettlement is required.

➢ Lilagar River is flowing at a distance of 0.5 Km. from the plant site.

➢ Burgahan RF is situated within 10 Km radius of the plant site.

➢ Hasdeo Right Bank canal is present at a distance of 8.7 Km. from the plant site.

➢ Neosa Pahar is present at distance of 1.6 Km. from the plant site.

➢ No habitation is present in the proposed site.

➢ The following industries are situated in 10 Kms. radius:

TABLE 2.1
INDUSTRIES WITHIN 10 KM RADIUS

Sr. No.	NAME OF THE INDUSTRY	TYPE Of INDUSTRY
1.	M/s Gevra Mines	Mining
2.	M/s Dipika Mines	Mining
3.	M/s Solar Capital Ltd.	Industrial Explosive
4.	M/s Sri Krishna Explosive	Industrial Explosive
5.	M/s SV Power Pvt. Ltd.	Power plant
6.	M/s Gulf Oil Corporation Ltd.	Explosive Division
7.	M/s KL Tech Energy Ltd.	Industrial Explosive
8.	M/s Ideal Industry Ltd.	Industrial Explosive

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).

➤ **For Ferro Silicon:**

Sr. No.	Item	Quantity (TPA)	Source	Mode of Transportation
1	Quartz	40225	Korba / Bilaspur	Covered trucks
2	Pet coke	13325	Korba / Bilaspur	Covered trucks
3	M.S Scrap	865	Korba / Bilaspur	Covered trucks
4	Electrode paste	2000	Korba / Bilaspur	Covered trucks

➤ **For Silico Manganese**

Sr. No.	Item	Quantity (TPA)	Source	Mode of Transportation
1.	Manganese Ore	65650	MOIL, Nagpur	By Rail upto the nearest railway siding & by Covered trucks
2.	Manganese slag	37310	Inplant generation	Covered trucks
3.	Quartz	16125	Korba / Bilaspur	Covered trucks
4.	Pet Coke	6700	Korba / Bilaspur	Covered trucks

➤ **For Ferro Manganese**

Sr. No.	Item	Quantity (TPA)	Source	Mode of Transportation
1	Manganese Ore	97500	MOIL, Nagpur	By Rail up to the nearest railway siding & by Covered trucks
2	Pet coke	56150	Korba / Bilaspur	Covered trucks
3	MS Scrap	3863	Korba / Bilaspur	Covered trucks
4	Electrode paste	11360	Korba / Bilaspur	Covered trucks

➤ **For Power Plant (50 MW)**

Sr. No.	Item	Quantity (TPA)	Source	Mode of Transportation
1.	**Coal:** **a.** Domestic or **b.** Imported	263000 or 160000	SECL / CIL or Imported	Railway rakes & by Covered trucks or Sea route , rail rakes & by covered trucks
2.	Washery Rejects	300000	In plant generation	Through covered conveyer

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

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.

3.2.5   POWER GENERATION

Coal (Indian / Imported) will be used in CFBC Boiler to generate 50MW electricity. CFBC Boiler will emit lower SO_2 and NO_x emissions. The flue-gases will be treated in high efficiency ESP and then discharged through stack of 86 m height. The outlet dust emission will be less than 50 mg/Nm^3.

3.3   WATER REQUIREMENT

The proposed project requires about 5135 m^3/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 sourced from River Hasdeo [approx. 14 km] and Ground water [within the premises].   In the proposed water cooled 50 MW power plant and Ferro Alloys plant closed cooling circuit will be implemented to reduce the water consumption significantly. The details of total water consumption is given in below mentioned table:

Sr. No.	SOURCE	QUANTITY
1.	**Ferro Alloys**	
	Make up water for Ferro alloys	350 m^3/day
2.	**Power plant**	
	i) Cooling tower make up	4350 m^3/day
	ii) Boiler make up	325 m^3/day
	iii) DM plant regeneration	100 m^3/day
3.	**Domestic**	10 m^3/day
	Total	**5135 m^3/day**

Existing plant water requirement   :   320 m³/day

Expansion project water requirement   :   5135 m³/day

Total water requirement after expansion   :   5455 m³/day

3.5   WASTE WATER GENERATION

Total effluent generated from the proposed project is 293 cum/day. There will not be any process waste water (or) cooling water blow down from the Submerged Electric Arc Furnace as closed circuit cooling system will be adopted. Cooling tower blowdown, Boiler blowdown & DM Plant regeneration will be the sources of effluent generation from the power plant.

QUANTIFICATION OF WASTE WATER:

SOURCE	QUANTITY
Cooling tower blowdown	135 m³/day
Boiler blowdown	50 m³/day
DM plant regeneration	100 m³/day
Domestic	8 m³/day
Total	**293 m³/day**

3.6   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 proposed site.

4.1 Ambient Air Quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2 & 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
$PM_{2.5}$	:	16.4 $\mu g/m^3$ to 30.7 $\mu g/m^3$
* PM_{10}	:	27.7 $\mu g/m^3$ to 51.2 $\mu g/m^3$
SO_2	:	6.3 $\mu g/m^3$ to 14.3 $\mu g/m^3$
NO_X	:	7.3 $\mu g/m^3$ to 20.1 $\mu g/m^3$

* 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 BIS: 10500 & BIS: 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 42.00 dBA to 47.35 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/m³, 9.2 µg/m³ and 4.1 µg/m³ respectively at a distance 1200 m in the down wind direction.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE PROJECT

Item	PM_{10} (µg/m³)	SO_2 (µg/m³)	NO_X (µg/m³)
Maximum baseline conc. in the study area	51.2	14.3	20.1
Maximum predicted incremental rise in concentration due to KJSL Coal & Power Pvt. Ltd.	0.8	9.2	4.1
Maximum predicted incremental rise in concentrations due to other industries in the area	1.2	3.7	2.2
Net resultant concentrations during operation of the plant	53.2	27.2	26.4
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 with in 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. 27.23 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.

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 blowdown, 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 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 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

Sr. No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1.	*Water quality*			
a.	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
b.	**Waste water quality**			
	Effluent at the outlet of the ETP	Once in a month	Composite sampling (24 hourly)	As per EPA Rules, 1996
	Sanitary waste water	Once in a month	Composite sampling (24 hourly)	As per EPA Rules1996
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 & NO_x
C.	Fugitive emissions	Once in a Month	8 hours	PM
3.	*Meteorological Data*			
	Meteorological data to be monitored at the plant site.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4.	*Noise level monitoring*			
	Ambient Noise levels	Once in a month	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 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 Furnaces	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

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:

Sr. No	Solid waste	Quantity (TPA)	Disposal
1.	Ash from Power Plant (with domestic coal + washery rejects)	283350	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 + washery rejects)	181000	Will be given to nearby cement plants / Brick manufacturers/back filling in abandoned mines

Sr. No	Solid waste	Quantity (TPA)	Disposal
2.	**Slag generation from Ferro Alloys manufacturing**		
	a) Ferro Manganese	75015	Will be used in manufacture of silico manganese as it contains high MnO_2 and silicon.
	b) Silico Manganese	56700	Will be used for road construction / crushed & after recovery of mineral given to brick manufactures.
	c) Ferro Silicon	9495	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 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

27.23 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.