SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

OF

Krishna Iron Steel & Power Pvt. Ltd.

Kesda Village, Simga Tehsil,
Bhatapara – Balodabazar District [previously – Raipur], C.G.

Submitted to:

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Commercial Complex, Housing Board Colony, Kabir Nagar, **Raipur**

1.0 PROJECT DESCRIPTION

M/s. Krishna Iron Steel & Power Pvt. Ltd. has proposed to establish Steel Plant at Kesda Village, Simga Tehsil, Bhatapara - Balodabazar District, Chhattisgarh. 39.75 Acres of land is purchased for the proposed project. The total capital investment of the proposed project is Rs. 140 Crores. The following are the products and production capacities proposed in the proposed Steel Plant:

S.No.	Details		Plant Configuration	Install Capacity
1.	Sponge Iron through Rotary kilns		3 x 100 TPD	90,000 TPA
2.	Billets through Induction Furnace with Concast		2 x 15 MT/ Heat	90,000 TPA
3.	Rolled products such as TMT bars/ structural steels through Rolling Mill.		1 x 300 TPD	90,000 TPA
4.	Ferro Alloys through Submerged Arc Furnace (Fe-Si, Si-Mn, Fe-Mn)		1 x 9 MVA	FeSi – 6300 TPA SiMn – 14200 TPA FeMn – 18500 TPA
5.	Power Plant (20 MW)	Through WHRB Based	1 x 6 MW	6 MW
		Through FBC	1 x 14 MW	14 MW

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, have prepared Rapid Environmental Impact Assessment (REIA) report for the proposed project of Steel Plant by incorporating the Terms of Reference approved by the Ministry of Environment & Forests, New Delhi. The report contains detailed description of the following:

a. Detailed characterization of status of environment within 10 Km. radius of the plant 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 activity along with the noise level assessment.
c. Detailed Environmental Management Plan (EMP) to be adopted.
d. Post project Environmental monitoring.

1.1 RAW MATERIALS

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

Raw Material	Consumption (TPA)	Sources	Method of Transportation
For DRI (Sponge iron)			
Iron Ore	144000	Barbil, Orissa NMDC, Chhattisgarh	By Rail & by Road
Coal	117000	SECL Chhattisgarh / MCL Orissa / Imported Coal	By Rail & by Road
Dolomite	4500	Raipur / Durg	By Road (Covered trucks)
For Induction Furnace (MS billets)			
Sponge Iron	90000	In plant generation	Covered conveyor
Scrap	12750	Raipur / Durg	By Road (Covered trucks)
Ferro Alloys	1350	Raipur / Durg	By Road

			(Covered trucks)
For Rolling Mill (TMT bars / Structural steel)			
Steel billets / Ingots	97500	In plant generation & External Purchase	Covered conveyor
For Power plant (14 MW FBC based power plant)			
Dolochar	27000	In plant generation	Covered conveyor
Coal	53700	SECL Chhattisgarh / MCL Orissa / Imported Coal	By Rail & by Road
For Ferro Silicon (FeSi)			
Quartz	8445	Raipur / Durg	By Rail / Road
Pet coke	2800	Raipur / Durg	By Rail / Road
MS Scrap	175	Raipur / Durg	Covered conveyor
Electrode paste	420	Raipur / Durg	By Road
For Silico Manganese (SiMn)			
Manganese Ore	15890	Orissa & MOIL, Nagpur	By Rail & by Road
Mn. Slag	9000	In plant generation	---
Quartz	3900	Raipur / Durg	By Rail / Road
Pet coke	1580	Raipur / Durg	By Rail / Road
For Ferro Manganese (FeMn)			
Manganese Ore	26700	Orissa & MOIL, Nagpur	By Rail & by Road
Pet coke	15390	Raipur / Durg	By Rail / Road
MS Scrap	1030	Raipur / Durg	Covered conveyor
Electrode Paste	3080	Raipur / Durg	By Road

1.2 MANUFACTURING PROCESS

1.2.1 Sponge Iron (DRI)

Refractory lined rotary kilns will be used for reduction of iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln.

Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the Pellets and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000^0C enters the reduction zone. Temperature of the order of 1050^0C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron.

This hot material will be transferred to Heat exchanger. In Heat exchanger the material will be cooled to 160 ^{0}C. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char.

Magnetic and non-magnetic material will be separated through magnetic separators and stored in separate bins. The hot flue gases will be taken to a Waste Heat Recovery Boiler and after heat recovery they will be treated in high efficiency ESP and discharged into the atmosphere through stack whose height will be in accordance with CPCB norms.

1.2.2 Steel Melting Shop

Initially scrap & other metallics such as Sponge Iron will be charged into the Induction furnace. After scrap & other metallics are fully melted, the temperature of the melt reaches above 1600 ^{0}C, then DRI will be continuously charged into the furnace. As soon as the charge is melted, bath samples will be taken and temperature will be measured. There will be one induction furnace of 2 x 15 MT capacity. Concast will be used to produce Billets.

1.2.3 Rolling Mill

In the proposed project there will be 1 x 300 TPD reheating furnaces are proposed for the heating of billets. Furnace will be heated with Furnace oil. A bar and round mill will be installed in the plant to produce 300 TPD of TMT bars/ Structural steel.

1.2.4 Power Generation

1.2.4.1 Waste Heat Recovery Boiler from Sponge Iron Unit

The hot flue gases from DRI kilns will pass through waste heat recovery Boilers to recover the heat and to generate 14 MW electricity. The gases after heat recovery will pass through ESPs and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere.

1.3 WATER REQUIREMENT

Total water requirement for the proposed project will be 675 cum/day. This includes Make-up water for DRI, Induction Furnace, Rolling Mill, SEAF, Power and Domestic water. Air cooled condensers have been proposed in the power plant instead of cooling towers to reduce the water consumption. The water requirement for the proposed project will be met from Groundwater source. Necessary permission from the Central Ground Water Board will be obtained in due course.

WATER REQUIREMENT

S.No.	UNIT	WATER CONSUMPTION (Cum/day)
1.	Cooling water make-up for DRI plants	120
2.	Cooling water make-up for SMS	100
3.	Cooling water make-up for Rolling Mill	120
4.	Cooling water make-up for SEAF	25
5.	Make water for Power Plant	300

	i) Cooling tower make-up	270
	ii) Boiler make up	27
	iii) DM plant regeneration	3
6.	Domestic	10
Total		**675**

1.4 Waste Water Generation

The total waste water generation from proposed project will be 49 cum/day. There will not be any process waste water (or) cooling water blowdown from the DRI Plant, Rolling Mill, SMS and SEAF as closed circuit cooling system will be adopted. Boiler blowdown, CT Blowdown, DM Plant regeneration and sanitary waste water will be the sources of effluents. The following will be the total wastewater & it's break-up.

WASTE WATER GENERATION

S.No.	UNIT	WASTEWATER GENERATION (CUM/DAY)
1.	POWER PLANT	
	a) Cooling tower blowdown	32
	b) Boilers blowdown	6
	c) D.M. plant regeneration water	3
2.	Sanitary waste water	8
Total		**49**

1.5 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

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 $PM_{2.5}$, PM_{10}, SO_2 & NOx 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
$PM_{2.5}$	:	12.9 to 25.5 µg/m^3
PM_{10}	:	21.5 to 42.5 µg/m^3
SO_2	:	5.8 to 9.5 µg/m^3
NO_X	:	6.6 to 10.6 µg/m^3

* PAH in PM_{10} were analyzed and their concentrations at all monitoring Stations are Below Detectable Level.

2.2 Water quality

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

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 52.10 dBA to 42.89 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 PM_{10}, SO_2, NO_X. The predictions of Ground level concentrations have been carried out using Industrial Source Complex 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.

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 the proposed project in the area will be 0.60 µg/m^3, 6.2 µg/m^3 and 4.2 µg/m^3 respectively at a distance 950 m in the down wind direction.

NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO THE PROPOSED PROJECT

Item	PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)
Maximum baseline conc. in the study area	42.5	9.5	10.6
Maximum predicted incremental rise in concentration due to KISPPL	0.6	6.2	4.2
Maximum predicted incremental rise in concentrations due to other industries in the area.	1.1	8.1	4.5
Net resultant concentrations during operation of the plant	**44.2**	**23.8**	**19.3**
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 project. Hence there will not be any adverse impact on air environment due to the proposed project.

3.2 Prediction of impacts on noise quality

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set 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. 23.4 acres of extensive greenbelt is 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.

3.3 Prediction of impacts on Water Environment

There will not be any process waste water (or) cooling blow down generation from the DRI plant, SMS, Rolling mill & SEAF plants as closed circuit cooling system will be followed.

The effluent generated from power plant activities which includes 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 will be used for dust suppression & for greenbelt development. Zero effluent discharge will be adopted in the proposed 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. Necessary permission from the Central Ground Water Board will be obtained in due course. Hence there will not be any adverse impact on water environment in the study area due to the proposed project.

3.4 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 installed and operated 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 project.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Ambient Air Quality, Sack monitoring & effluent analysis will be carried out regularly as per CPCB norms and the analysis reports will be submitted to Ministry of Environment & Forest, Bhopal & Chhattisgarh Environment Conservation Board regularly.

5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed project. Hence no R & R study has been carried out.

6.0 PROJECT BENEFITS

With the establishment of the proposed 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 Environnent

S.No.	Source	Control Equipment	Guaranteed Outlet Dust Emission
1.	DRI kilns with WHRB	Electro Static Precipitators (ESP)	< 50 mg/Nm^3
2.	Induction Furnaces (2 x 15 MT)	Fume Extraction & cleaning system with bag filters	< 50 mg/Nm^3
3.	Submerged Electric Arc Furnace (1 x 9 MVA)	Fume Extraction & cleaning system with bag filters	< 50 mg/Nm^3
4.	FBC based power plant	Electro Static Precipitators (ESP)	< 50 mg/Nm^3

The following air pollution 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.
- ♣ The collected dust from the Bag house of Steel Melting will be taken to a dust storage bin through a pneumatic conveying system.
- ♣ 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.

7.2 Water Environment

- ♣ There will not be any process waste water (or) cooling blow down generation from the DRI plant, SMS, Rolling mill plants & SEAF as closed circuit cooling system will be followed.
- ♣ The effluent generated from the power plant will be in the form of Cooling tower blow down, Boiler blow down, D. M. Plant regeneration water and sanitary water.
- ♣ Sanitary waste water will be treated in septic tank followed by soak pit.

7.3 Solid Waste Generation & Disposal

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

S.No	Solid Waste	Quantity (TPA)	Method of Disposal
From Sponge Iron unit			
1.	Dolochar	27000	Will be actively used in FBC boiler as fuel
2.	Ash & Dust from Bag filters	33600	Will be given to brick manufactures
3.	Accretion slag	900	Will be used in road construction
4.	Wet Scraper sludge	4500	Will be given to brick manufactures
From Steel Melting Shop			
1.	Slag from SMS	9000	Will be used in road construction after removal of Iron Contents
From Rolling Mill			
1.	Mill scales	4500	Reused in to the SMS
From FBC Power unit			
1.	Ash	40365	Will be given to brick manufactures / Cement plants
From Ferro Alloys unit			
1.	Slag from FeMn	15000	To be reused in manufacture of Silico Manganese as it contains high MnO_2 and Silicon
2.	Slag from FeSi	1900	To be used in cast iron foundries.
3.	Slag from SiMn	15425	To be used for road construction / slag cement manufacture

7.4 Noise environment

The major sources of noise in the proposed project will be STG, boilers, compressors, DG set etc. The employees working near the noise generating sources will be provided with earplugs. Acoustic enclosures will be provided to turbines. 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.

7.5 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 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 project.

7.6 GREENBELT DEVELOPMENT

13.75 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.

7.7 IMPLEMENTATION OF CREP RECOMMENDATIONS

All the Corporate Responsibility for Environment Protection (CREP) recommendations will be strictly followed in the power plant.