

EXECUTIVE SUMMARY

OF

0.70 MTPA INTEGRATED STEEL PLANT

AT

**ORVAKAL MEGA INDUSTRIAL HUB (OMIH)
ANDHRA PRADESH INDUSTRIAL
INFRASTRUCTURE CORPORATION,
GOVT. OF ANDHRA PRADESH,
GUTTAPADU VILLAGE, ORVAKAL MANDAL,
KURNOOL DISTRICT,
ANDHRA PRADESH.**



Jai Raj Ispat Limited

EXECUTIVE SUMMARY

1.0 INTRODUCTION

Jai Raj Ispat Limited (JRIL) proposes to set up an Integrated Steel Plant to produce 0.7 Million Tonnes Per Annum (MTPA) Capacity at Orvakal Mega Industrial Hub (OMIH) of Andhra Pradesh Industrial Infrastructure Corporation (APIIC), Govt. of Andhra Pradesh (A.P), Guttapadu Village, Orvakal Mandal, Kurnool District, Andhra Pradesh

The proposed activity is categorized as **Category – “A”** project as per Environmental Impact Assessment (EIA) Notification SO 1533, of 14-09-2006 and amendments thereof.

JRIL has submitted the necessary application for establishing 0.5 MTPA Integrated Steel Plant to MoEF and obtained Terms of Reference vide letter no J-11011/110/2016-IA.II(I) dated 22nd June 2016. Subsequently based on market study, JRIL proposed to increase the installed capacity from 0.5 MTPA to 0.7 MTPA. Accordingly JRIL approached MoEF&CC and obtained the amendment of TOR for 0.7 MTPA Steel Plant Vide letter F.No. J-11011/110/2016-IA II (I) dated 11th May 2017.

Jai Raj Ispat Limited (JRIL) is more than 30 years old Company producing Direct Reduced Iron (DRI) and Thermo-Mechanical Treated (TMT) Rebars. The manufacturing divisions are located at;

- Sponge Iron Division in Bellary (Karnataka)
- Steel Melt Shop Division and Rolling Mill Division at Jeedimetla, Hyderabad, Telangana State.

2.0 PROJECT DESCRIPTION

2.1 NATURE AND SIZE

The Proposed project consists of establishing an Integrated Steel Making Facilities using raw materials as Iron Ore, Coke, Fluxes and manufacturing end useable products i.e. Billets, TMT Rebars & Pig Iron with the following manufacturing units and finished products.

MANUFACTURING UNITS

- 0.798 MTPA Sinter Plant
- 0.596 MTPA Blast Furnace
- 0.556 MTPA Steel Melting Shop
- 0.087 MTPA Air Separation Plant (Oxygen/Nitrogen/Argon)
- 0.056 MTPA Lime Calcination Plant
- 18.0 MW Captive Power Plant based on surplus BF & (EOF/OBV/BOF) Gases.

PRODUCTS

- 0.700 MTPA TMT Rebars, Alloy Steel Bars, Structural Steel & Pig Iron.

2.2 REQUIREMENTS OF THE PROJECT

Raw material like Iron Ore, Coke, Fluxes etc., will be received through road transport and stored in open storage areas till the railway siding is implemented.

Land: The proposed project will be located in an area of 400 acres allotted by Andhra Pradesh Industrial Infrastructure Corporation (APIIC) in the Orvakal Mega Industrial Hub in Kurnool district of Andhra Pradesh (A.P).

Water: Total fresh water requirement is estimated at 9600 m³/day and the same will be supplied by APIIC. APIIC has planned to lift water from the Srisailem foreshore (at Muchumarri village) to Meedivemula Reservoir. Water requirement of Orvakal Mega Industrial Hub will be sourced from Meedivemula Reservoir.

Electric Power: The total Electric Power requirement will be around 63 MW. The power will be stepped down to 11.0 KV. The 11.0 KV Switchgear will distribute power to the LT substations located at load centres. A captive power plant of 18 MW is proposed to use the

surplus gases from blast furnace & oxygen furnace. Provision will be made to sell the surplus power if any to the grid.

Man Power: The estimated direct manpower requirement is 1133 people. About 6000 people will benefit under indirect employment. Apart from this the proposed project will encourage local service providers and ancillary industries.

2.3 PROJECT COST

The estimated capital cost of the project is about Rs. 1657 Crores. A budget of Rs. 21.15 Crores is provided for implementation of the Environmental Management Plan (EMP) to mitigate the anticipated impacts due to the project.

2.4 SCHEDULE OF IMPLEMENTATION

The commercial operation is planned for May 2020 subject to receipt of the statutory clearances and financial closure.

3.0 PROCESS DESCRIPTION

The proposed project is a green field Integrated Steel Plant of 0.7 MTPA capacity using raw materials as Iron Ore, Coke, Fluxes and manufacturing end useable products i.e. Billets, TMT Rebars & Pig Iron.

To minimize the energy consumption and maximize productivity, it is proposed to adopt All Hot Charge Route with 'Sinter Plant → Blast Furnace → Oxygen Furnace [Energy Optimising Furnace (EOF) / Oxygen Blowing Vessel (OBV) / Basic Oxygen Furnace (BOF)] → Ladle Refining Furnace → Continuous Casting Machine → Endless Rolling Mill' as the preferred manufacturing route for this project.

4.0 DESCRIPTION OF ENVIRONMENT

To study the impacts due to the proposed steel plant, the EIA study was carried out in the study area of 10 km radius during Postmonsoon season – 2016 (October-2016 to December-2016). Summary of the observations is given below:

- The predominant wind directions during this period were from SE-SSE-S-SSW sector accounting to about 57.47% of the time. Calm winds of less than 1.65 kmph prevailed for 8.47% of the time. Wind speed during this period was mostly above 15 kmph.
- Existing baseline Ambient Air Quality (AAQ) in the study area has been assessed through a network of eight AAQ stations.

Summary of Ambient Air Quality ($\mu\text{g}/\text{m}^3$) – Postmonsoon-2016

Code No	Location Name	98 th Percentile values			
		PM ₁₀	PM _{2.5}	SO ₂	NO _x
A1	Project site	54.0	26.3	14.4	15.7
A2	Konthalapadu	54.2	25.6	12.4	13.2
A3	Uppalapadu	50.5	25.7	15.3	16.1
A4	Uyyalawada	58.4	26.3	11.8	12.3
A5	Narnuru	60.6	27.2	14.2	15.5
A6	Vorvakallu	54.3	26.6	14.7	15.9
A7	Guttapadu	50.8	27.2	13.8	15.7
A8	Husanipuram	57.6	28.1	14.9	15.9

Results of the ambient air quality at all the above locations were found to be well within the limits of National Ambient Air Quality (NAAQ) standards specified for Industrial, Residential, Rural and other areas.

- **Noise level** monitoring had been carried out at one location within the core zone and nine locations in the buffer zone to establish the baseline ambient noise levels.

DETAILS OF NOISE MONITORING LOCATIONS

STATION CODE	LOCATION/ VILLAGE	WITH RESPECT TO PROJECT SITE		NOISE LEVEL, dB (A)	
		Distance (km)	Direction	Day Equivalent (L _d)	Night Equivalent (L _n)
N-1	Project site	-	-	52.8	42.6
N-2	Guttapadu	0.6	ENE	51.7	43.8
N-3	Kontalapadu	0.5	S	53.2	43.5
N-4	Husainapuram	6.3	SE	54.3	42.1
N-5	Uppalapadu	3.0	SW	52.6	42.7
N-6	Uyyalavada	7.1	WSW	53.4	42.3
N-7	Bukkapuram	7.6	SW	53.0	44.8
N-8	Narnuru	8.3	NW	54.4	44.7
N-9	Pericherla	6.8	NNW	52.5	41.6
N-10	Orvakallu	3.1	NE	54.1	43.9

- **Water:** Nine ground water samples and one surface water sample were collected from various sources in and around Project Site within 10 km radius for assessment of existing physico-chemical and bacteriological quality. All the samples showed compliance to drinking water standard of IS 10500.
- No surface water bodies are existing in 10 km radius of the study area except for Kommu cheruvu located at 7.0 km. Other streams existing in the study area are not perennial and are dry throughout the year.

Summary of Water Samples Analysis (Ground Water)

PARAMETER	RANGE	ACCEPTABLE LIMITS	MAX. PERMISSIBLE LIMITS IN ABSENCE OF ALTERNATE SOURCE
pH	6.78-7.36	6.5 to 8.5	No Relaxation
Total Dissolved Solids (TDS)	508-1520	500	2000
Total Hardness (TH)	262-546	200	600
Chlorides (Cl)	50-294	250	1000
Fluorides (F)	0.9-1.2	1.0	1.5
Iron (Fe)	<0.05-0.06	0.3	No Relaxation

Summary of Water Sample Analysis (Surface Water)

PARAMETER	RESULT
pH	8.04
Total Dissolved Solids (TDS)	332
Total Hardness (TH)	99
Chlorides (Cl)	33
Fluorides (F)	0.6
Iron (Fe)	0.9

- **Soil:** Representative soil samples were collected from ten locations for analysis of the physico chemical characteristics. The soil quality was found to be moderate.
- **Flora and Fauna:** Information on flora and fauna in the study area has been collected as part of the Ecological survey conducted during the month of October, 2016. There are no endangered, threatened, rare plant species in the study area. There are no Schedule-1 fauna and no migratory paths reported from the study area.

- **Socio-Economy:** There are 28 villages located in the radius of 0-10 Km. About 15 Revenue villages and 3 hamlets were taken up for detailed study. In all the villages, Focused Group Discussions (FGD) were held for collecting public opinion about the project, awareness, existing infrastructural facilities and any specific needs of the villages. This data was utilised for formulating the CSR Plan.

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 AIR ENVIRONMENT

The impact on air environment was computed by taking base line concentrations monitored in the study area and the proposed emissions from the integrated steel plant.

5.2 OVERALL SCENARIO

Predicted maximum ground level concentrations obtained for 24-hour mean meteorological data of Post Monsoon Season – 2016 are superimposed on the existing baseline concentrations to project the overall post project scenario in the study area.

The Overall Scenario with predicted concentrations over the baseline are shown below.

OVERALL SCENARIO WITHIN STUDY AREA ($\mu\text{g}/\text{m}^3$)

24-Hourly Concentrations	Particulate Matter PM ₁₀	Sulphur dioxide (SO ₂)	Oxides Of Nitrogen (NO _x)
Baseline Scenario (max)	60.6	15.3	16.1
Predicted Incremental Concentration (Max)	9.12	8.12	6.13
Overall Scenario (worst case)	69.72 {100}	23.42 {80}	22.23 {80}

AIR ENVIRONMENT

JRIL will implement the following air pollution control measures listed below to comply with the National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 277(E) dated 31st March, 2012 for Iron and Steel Industry.

PROPOSED AIR POLLUTION CONTROL EQUIPMENT

Sl. No.	Unit Description	Proposed Air Pollution Control Devices/Methods.
1	Blast Furnace	Gas cleaning system
2	Sinter plant	Electrostatic precipitator
3	SMS	Bag filter
4	Lime Kiln	Bag filters
5	Material handling systems of Sinter Plant & RMHS, BF, SMS, Lime Plant, etc.	Aspiration through hoods, ducting and bag filters

In addition to the above, the following steps are taken to prevent air pollution due to air borne dust;

- Greenbelt in area of 52 Ha will be developed all along the boundary of the plant to control the fugitive dust and noise.
- Proper maintenance of Air pollution control equipment.
- Regular maintenance of vehicles and machinery are carried out in order to control emissions.
- The workers will be provided with personal protective equipment like dust masks, ear plugs, ear muffs etc.,
- Good housekeeping and proper maintenance will be practiced by the industry for controlling pollution.

5.3 NOISE ENVIRONMENT

The major source of noise pollution in the Integrated Steel Plant is from the following:

Rotating equipment like Fans, Blowers, Feed Water Pumps, TG Set, Compressors, Mill motors, etc.,

- ❖ Boiler & Super heater safety valves.
- ❖ Vents for BF blast system, steam vents in Power Plant, air/ gas vents in Air Separation Plant.
- ❖ Metal cutting shears in Rolling Mills.

Noise generating sources will be provided with acoustic enclosures to minimize the noise.

The green belt proposed around the perimeter will help in reducing the noise emitted by various equipment in the plant.

The following measures will be undertaken to protect the workers from exposure to higher noise levels:

- Provision of protective devices like ear muffs/ear plugs
- Provision of sound proof chamber to workers working near high noise generating machinery like compressors, turbines etc.,.

5.4 WATER ENVIRONMENT

Total fresh water requirement is estimated at about 9600 m³/day and the same will be supplied by APIIC. APIIC has planned to lift water from the Srisailam foreshore (at Muchumarri village) to Meedivemula Reservoir. Water requirement of Orvakal Mega Industrial Hub will be sourced from Meedivemula Reservoir.

The blow down water and neutralized waste shall be used for Slag Cooling in SMS, and dust suppression in material handling. The treated water to an extent of 573 m³/day will be utilized for greenbelt development, dust suppression and slag quenching. This will help in conservation of fresh water.

About 28 m³/day of sewage water is segregated and sent to sewage treatment plant for treatment.

5.5 SOLID WASTE MANAGEMENT

The solid waste generated from the steel plant will be recycled or disposed to authorised vendors as given below.

SOLID WASTE GENERATION & DISPOSAL

Item	Disposal
Sinter Plant & RMHS	
Sinter Fines (-5mm)	Charged back in blend mix for sinter production
Bag filter dust	Charged back in blend mix
Blast Furnace	
Primary gas cleaning dust	Used in Sinter Plant
Bag Filter Dust	Bag Filter dust to be used in Sinter Plant
Granulated Slag	Sold to cement manufacturers
Iron skull scrap	Used in SMS charge
Steel Melting Shop & Slag Crusher	
Bag Filter Dust (EOF, LF, FAFA etc.)	Bag Filter dust to be used in Sinter Plant
Slag	After crushing it is Mixed in sinter plant blend. About 3,000 T metal recovered for recycle.
Steel skull	Used with scrap as charge
Rolling Mill	
Mill Scale	Iron bearing scale for sinter Plant
Recovered oily waste	Chain lubrication
Miscellaneous wastes like Cotton wastes, replacement parts of rubber and metal parts, and hardware used refractories	To be collected on a daily basis and disposed contractors.
Lime Kiln	
Lime stone dust & fines	Used in Sinter Plant
Lime dust & fines	Sinter Plant and in PCM mould coating after making lime milk (Hydration)

5.6 GREENBELT DEVELOPMENT

It is planned to develop a greenbelt in an area of 52 Ha (33 % of the plant area). A thick green belt all along the roads and plant periphery will be developed.

A nursery will be developed within the plant area to support the greenbelt development.

A budget of Rs 1.35 crores has been earmarked for Greenbelt development for a period of three years.

6.0 BUDGET FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN

The following budget for implementation of Environmental Management Plan will be incurred by JRIL. About Rs. 21.55 Crores will be spent towards capital cost and Rs. 1.50 Crores towards recurring cost.

BUDGET FOR EMP

S.No	Item	Capital cost (Rs. in Crores)	Recurring Cost per annum (Rs. in Crores)
1	Air pollution Control (bag filter, esp, dust suppression, dust extraction,	10.00	0.35
2	Continuous Ambient air quality stations (3 nos)	1.80	0.20
3	CEMS (Stack online analyser)	0.30	0.05
4	Water Pollution Control ETP & STP	0.75	0.10
5	Solid Waste Management	4.00	0.50
6	Liner for Raw material storage areas	2.00	0.10
7	Occupational health	1.00	0.12
8	Green belt development	1.30	0.08
	Total	21.15	1.50

7.0 OCCUPATIONAL HEALTH

Employees will be monitored for occupational diseases by conducting the following tests

- Periodic medical examination – yearly
- Lung function test – Yearly, those who are exposed to dust
- Audiometry – yearly
- Chest X-ray once in five years
- Eye test - yearly

First aid training will be imparted to the selected employees for regularly.

About Rs. 1.0 Crore towards capital investment and Rs. 0.12 Crore for operational expenditure is budgeted for implementation of occupational health programme in the plant.

JRIL will establish an Occupation Health Center (OHC) at the plant site.

8.0 COMMUNITY DEVELOPMENT

JRIL has provided a budget of Rs. 150 Lakhs based on the need based study to implement community development activities under CSR.

Construction Phase: During Construction Phase JRIL proposes to implement CSR activities in the surrounding villages namely Kottala, Guttapadu, Kontalapadu & Uppalapadu falling within 3.0 km radius of Orvakal Mega Industrial Hub. A budget of INR 150 lakhs has been proposed.

BUDGET FOR COMMUNITY DEVELOPMENT (CONSTRUCTION PHASE)

		Rs. In Lakhs.
SL No	Development Activity	Total
I	DRINKING WATER AND SANITATION	
1	Provision of Drinking water facility in the villages	26
2	Repair/Construction of new roads side drains etc.	17
II	SKILL DEVELOPMENT & TRAINING FOR UNEMPLOYED	
1	Conducting skill development programs in Heavy Vehicle Driving, Hospitality Services, Security Guards etc.	12
2	Providing technical training in association with local ITI/ Polytechnic Institutes	12
III	HEALTH	
1	Conducting medical camps in Co-ordination with local NGOs	24
2	Infrastructure at Primary Health Centre	13
IV	EDUCATION	
1	Provision of scholarships for class toppers	13
2	Providing Infrastructural facilities, drinking water, sanitation/toilets/for both boys and girls/celebration at schools/cultural festivals/sport meets in the schools	14
3	Providing computers to schools/Teaching assistance/any other like development of playground/providing material/inter competitions	19
GRAND TOTAL		150

Operational Phase: During Operational Phase JRIL proposes to spend 2% of the profit every year as per the latest Govt. of India norms, for various socio-economic and community development activities in other villages of study area i.e., 10.0 km radius of Orvakal Mega Industrial Hub.

RISK ASSESSMENT, ON-SITE EMERGENCY PREPAREDNESS & DISASTER MANAGEMENT PLAN

The proposed facilities in the 0.70 MTPA Steel plant will be designed and engineered with all possible safety measures and standard code of practices of engineering. In spite of this, there may be some design deficiency or due to operation and maintenance faults, which may lead to accidental events causing damage to life and or property. The project will develop an onsite and offsite emergency preparedness plan. Regular training in safety and mock drills will be implemented to ensure safe operation of the Steel Plant.

9.0 SUMMARY AND CONCLUSION

9.1 PROJECT BENEFITS

Any industrial activity will help in improving the socio-economic benefits in areas like employment, communication, educational needs of the lower community. Following are the potential benefits due to implementation of this project by JRIL

- ✓ The JRIL plant acts as a force generator and along with other industries planned in the area will contribute to all round development of the area.
- ✓ Increase in employment opportunities leading to reduction in locals migrating outside for employment.
- ✓ Improvement in transport, communication, health and educational services.
- ✓ Increase in employment due to increased business, trade, commerce and service sector.
- ✓ Thus the overall impact on the socio economic environment of the region is expected to be beneficial for the local population.
- ✓ The project will contribute to the economy of the State in terms of Taxes and Duties.

The increase in emissions due to proposed project is marginal and with implementation of the control measures the overall scenario is well within the NAAQ standards.

Treated waste water is recycled and the plant is designed on Zero Discharge. The solid waste is recycled back to the process or sold to authorized vendors.

Greenbelt will be developed in an area of 52 Ha (33 % of the plant area). A thick green belt all along the roads and plant will be developed under greenbelt development program. This will minimize the impacts due to noise and dust. The greenbelt will also help in trapping the greenhouse gases (GHG).

Considering the above project benefits, the proposed integrated steel plant of 0.7 MTPA being implemented by JRIL deserves the Environmental Clearance.