

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**2x50 MW CAPTIVE THERMAL POWER PLANT OF  
1.0 MILLION TONNES STEEL PLANT AT**

**MANGALORE, KARNATAKA**

**OF**

**JAIPRAKASH ENGINEERING & STEEL CO. LTD.**

**Sponsored by**

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New Delhi**

**BY**

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LIST OF CONTENTS

INDEX	(i) to (viii)
LIST OF TABLES	(ix) to (xvi)
LIST OF FIGURES	(xvii) to (xix)
ACKNOWLEDGEMENTS	(xx) to (xxi)

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Table of Contents

<u>Sr.No.</u>	<u>Description</u>	<u>Page No.</u>
1.0	<u>INTRODUCTION</u>	
1.1	Preamble	1.1
1.2	Scope of the Assignment	1.1
1.3	Governmental Clearances	1.3
1.3.1	Letter Of Accord	1.3
1.3.2	NOC by the State Pollution Control Board	1.4
1.3.3	Site clearance by State Department of Environment	1.5
Annexure 1.1	Government Order No. C1 21 SPI 92, Bangalore Dated 15-6-92 - Proceedings of Government of Karnataka	1.6
Annexure 1.2	NOC issued by Karnataka State Pollution Control Board vide letter No. KSPCB/CFE/DK/IND/AE/DEO - 6/93 - 94/152	1.10
Annexure 1.3	Ministry of Environment & Forest, New Delhi letter No.3 - 11012/30/92/92-IA.II(I) dated January 12, 1993	1.13
Annexure 1.4	Site clearance by Dept. of Ecology and Environment & Forest, Govt. of Karnataka.	1.18

2.0	<u>PLANT LOCATION AND DESCRIPTION OF ENVIRONMENT OF THE STUDY AREA</u>	
2.1	Description of the Site and Surrounding area	2.1
2.1.1	The South Kanara District	2.1
2.1.2	General Features of the study area	2.1
2.2	Study Area For Present EIA Studies	2.3
2.3	Brief Profile of the Study Area	2.3
2.4	External Infrastructure	2.4
2.5	Water Requirement	2.5
2.6	Other Industries in Study Area	2.6
2.6.1	M/s Kudremukh Iron Ore Company Ltd (KIOCL)	2.7
2.6.2	New Mangalore Port Trust	2.7
2.6.3	M/s Mangalore Chemicals and fertilizers Ltd.	2.8
2.6.4	Industrial Estate at Baikampady for small scale Industries	2.9
2.6.5	Mangalore Refineries and Petrochemicals Ltd.	2.9
2.6.6	Domestic waste water from city sewage and Industrial township	2.10
2.7	Conclusion	2.11
3.0	<u>PROCESS DESCRIPTION, POLLUTION GENERATION &amp; CONTROL</u>	
3.1	Introduction	3.1
3.2	Raw materials	3.1
3.2.1	Water Requirement	3.2
3.2.2	Fuel Consumption	3.2
3.3	Major Equipment of Power Plant	3.3
3.3.1	Steam Generator	3.3
3.3.2	Boiler feed pumps and derives	3.4
3.3.3	Electrostatic Precipitator	3.4
3.3.4	Steam Turbine	3.5
3.3.5	Condensing Equipment	3.5
3.3.6	Deaerator	3.5
3.3.7	Generator	3.6
3.4	Major System of Power Plant	3.6
3.4.1	Mechanical Systems	3.6
3.4.1.1	Steam	3.6
3.4.1.2	Auxillary steam	3.7

3.4.1.3	Condensate	3.7
3.4.1.4	Boiler Feed System	3.8
3.4.1.5	Boiler drains	3.8
3.4.1.6	Fuel Oil system	3.9
3.4.1.7	Coal Handling system	3.9
3.4.1.8	Ash Handling system	3.10
3.4.1.9	Plant water system	3.12
3.4.1.10	Cooling tower	3.13
3.4.1.11	Compressed Air System	3.13
3.4.1.12	Ventilation and air conditioning system	3.13
3.4.1.13	Fire protection system	3.14
3.5	Power Generation Process	3.15
3.6	Pollution Generation	3.15
3.6.1	Air Pollution	3.15
3.6.2	Water Pollution	3.15
3.6.3	Solid Waste	3.16
3.7	Polluting Control measures in Thermal Power Plant	3.16
3.7.1	Air Pollution Control	3.16
3.7.2	Liquid Effluents	3.16
3.7.3	Solid waste	3.16
Annexure 3.1	Fly ash Utilization	3.21

4.0      **MICROMETEOROLOGY OF THE STUDY AREA**

4.1	Introduction	4.1
4.2	Temperature	4.1
4.3	Humidity	4.2
4.4	Rainfall	4.2
4.5	Climatology	4.3
4.6	Wind Velocity	4.3
4.7	Overall Inferences On Meteorology	4.5

5.0      **AIR ENVIRONMENT**

5.1	Introduction	5.1
5.2	Reconnaissance survey	5.1

5.3	Basis of selection of Ambient Air Monitoring station	5.2
5.3.1	W.H.O guidelines	5.2
5.4	Location of Ambient Air station	5.2
5.5	Frequency of Ambient Air Monitoring	5.3
5.6	Ambient Air Quality status during winter season	5.4
5.6.1	Baseline data	5.4
6.0	<u>WATER RESOURCES AND WATER QUALITY IN STUDY AREA</u>	
6.1	Introduction	6.1
6.2	Water requirement of the Power Plant	6.1
6.3	Water resources in the study area	6.2
6.3.1	Surface Water	6.2
6.3.2	Ground Water	6.3
6.3.3	Viability of River Netravati at Sarpadi Barrage	6.3
6.4	Water Quality	6.4
6.4.1	Ground Water Quality	6.4
6.4.2	Surface Water Quality	6.5
6.5	Other Waste Water discharges	6.6
7.0	<u>SOIL QUALITY OF THE STUDY AREA</u>	
7.1	Introduction	7.1
7.2	Soil Characteristics	7.1
7.2.1	Physical Characteristics of Soils	7.1
7.2.2	Chemical Characteristics of Soils	7.3
7.2.3	Conclusions	7.4
8.0	<u>LAND ENVIRONMENT OF THE STUDY AREA</u>	
8.1	LAND USE PATTERN	8.1
8.1.1	Land Use Classification	8.1
8.1.2	Decadal Changes in Land Use	8.2
8.1.3	Land Use of the proposed Site	8.3
8.2	Cropping Pattern	8.4

8.2.1	Introduction	8.4
8.2.2	Various Land use	8.4
8.2.3	Crop Yields	8.5
8.2.4	Crop diseases and their Control	8.6
8.2.5	Irrigation	8.6
8.3	Natural Vegetation	8.6
8.4	Wild Flora and Fauna	8.8
8.5	Plant species identified for green belt development	8.8
8.6	Livestock	8.9
8.6.1	Livestock details	8.9
8.6.2	Milk yield	8.10
9.0	<b><u>AQUATIC ECOLOGY</u></b>	
9.1	Topography of the coast line	9.1
9.2	Physical features	9.1
9.3	Chemical features	9.2
9.4	Previous marine ecology surveys	9.3
9.4.1	Introduction	9.3
9.4.2	Some of the observations on the prevalence of organisms	9.3
9.5	Fisheries in study area	9.5
9.6	Conclusions	9.5
10.0	<b><u>DEMOGRAPHIC AND SOCIO-ECONOMIC ENVIRONMENT OF THE STUDY AREA</u></b>	
10.1	DEMOGRAPHIC FEATURES OF THE STUDY AREA	
10.1.1	Introduction	10.1
10.1.2	Human Settlements	10.1
10.1.3	Amenities	10.1
10.1.4	Literacy	10.3
10.1.5	Occupational Pattern in Study Area	10.4
10.2	Socio-Economic Environment of the Study Area	10.5
10.2.1	Introduction	10.5
10.2.2	Family Size	10.6
10.2.3	Public facilities	10.6

10.2.4	Housing and Sanitary Conditions	10.7
10.2.5	Household items in villages and durables with families	10.7
10.2.6	Sources of Family Income	10.7
10.2.7	Land holding	10.7
10.2.8	General features of the area	10.8
10.2.9	Rehabilitation of displaced families	10.9
11.0	<u>NOISE ENVIRONMENT</u>	
11.1	Objectives and measurements	11.1
12.0	<u>PREDICTIONS OF IMPACTS</u>	
12.1	Preamble	12.1
12.2	Air Quality Predictions Through Mathematical Modelling	12.1
12.2.1	Introduction	12.1
12.2.2	Pollutional Loads	12.2
12.2.3	Fugitive Emissions Due to Material Handling at Port	12.2
12.2.4	Mathematical Model for Pollutants Dispersion	12.4
12.2.5	Downwind Ground Level Concentration	12.5
12.2.6	Atmospheric Stability Classification	12.5
12.2.7	Atmospheric Dispersion Coefficients	12.6
12.2.8	Effective Stack Height	12.6
12.2.9	Wind Velocity at Stack Level	12.7
12.2.10	Ambient Air Quality Standards	12.7
12.3	The Plan and Frame Work of Computation	12.8
12.3.1	Selection of Locations	12.8
12.4	Wind Velocities	12.8
12.5	Short Term (one hour) Concentration Equation	12.8
12.6	Long Term concentration Equation	12.9
12.7	Adequacy of Stack Height	12.9
12.8	Plan of Computations	12.10
12.9	Computed Incremental Pollutant Concentrations	12.10
12.9.1	Short term concentration due to individual stacks	12.10
12.9.2	Short term eight hourly concentration from individual stacks	12.13

12.9.3	Effective eight hourly short term concentration	12.14
12.9.4	Long term concentration due to Individual stack	12.14
12.9.5	Effective long term concentration	12.16
12.10	Overall Conclusions	12.16
12.11	Recommended Management of Ambient Air Quality for JESCO	12.17
12.11	Worst affected directions	12.13

13.0            ENVIRONMENTAL IMPACT STATEMENT

13.1	Scope of Impact Statement	13.1
13.2	Impacts on the physical components of Environment	13.2
13.2.1	Impact on Meteorology	13.2
13.2.2	Impact on Air quality	13.2
13.2.3	Impact on Surfacewater Hydrology and Quality	13.6
13.2.4	Impact on Groundwater Hydrology and Quality	13.7
13.2.5	Impact on Soils	13.8
13.2.6	Impact on Emission Sources	13.9
13.3	IMPACT ON THE ECOLOGY	13.10
13.3.1	Impact on Aquatic Ecology	13.10
13.3.2	Impact on Terrestrial Flora and Fauna	13.12
13.4	IMPACT ON HUMAN USE VALUES	13.13
13.4.1	Impact on Land Use	13.13
13.4.2	Impact on Transportation	13.14
13.4.3	Impact on Water Supply	13.15
13.4.4	Impact on Power Usage	13.16
13.4.5	Impact on Medical Facilities	13.17
13.4.6	Impact on Educational Facilities	13.18
13.4.7	Impact on Industries and other Occupations	13.18
13.4.8	Impact on Agriculture	13.19
13.4.9	Impact on Fisheries	13.20
13.4.10	Impact on Housing	13.21
13.4.11	Impact on Mineral Resources and Mining	13.22
13.4.12	Impact on Animal Husbandry	13.22
13.4.13	Impact on Visual Landscape	13.23
13.4.14	Impact on Archaeology	13.24

13.5	IMPACT ON SOCIO-ECONOMIC & SOCIO CULTURAL ASPECTS	13.24
13.5.1	Impact on Economic and Cultural Aspects	13.24
13.5.2	Impact on Gross Economic Yield of the Study Area	13.26
<b><u>14.0</u></b>	<b><u>ENVIRONMENTAL CONCERNS, MANAGEMENT MEASURES AND RECOMMENDATIONS</u></b>	
14.1	Possible environmental concers and management steps	14.1
14.1.5	Environmental concerns due to air emissions	14.2
14.1.6	Concerns in respect of Water availability, quality deterioration, and waste water generation	14.5
14.1.7	Solid waste disposal	14.7
14.1.8	Noise pollution	14.7
14.1.9	Wildlife and ecologically sensitive area	14.8
14.1.10	Human Settlements	14.8
14.1.11	Human health	14.9
14.1.12	Power supply	14.10
14.1.13	Environmental management cell	14.10
14.1.14	Beneficial Impacts	14.10
14.2	ENVIRONMENTAL MANAGEMENT PLAN	14.11
14.2.1	Objectives and Appriach	14.11
14.2.2	Mitgation of Impacts through Green Belt Development for the Mangalore Steel Plant	14.12
14.2.3	Monitoring and Review of Plant Operation and Management	14.16
14.2.4	Instruments/equipment proposed for the Environmental Laboratory and Source Monitoring	14.23
14.2.5	Staff requirement for Central Laboratory	14.23
14.3	Budgetary provisions	14.24
14.4	Final Recommendation	14.24

ENVIRONMENTAL IMPACT ASSESSMENT

2 X 50 MW CAPTIVE THERMAL POWER PLANT OF

1.0 MILLION TONNES STEEL PLANT AT MANGALORE

List of Tables

<u>Table No.</u>	<u>TITLE</u>	<u>Page No.</u>
2.1	List of Study Area Village (in 10 Kms Radius)	2.12
2.2	Large Industries in 10 Kms Study Area	2.14
2.3	Medium Industries in Study Area	2.15
2.4	Distribution of various Industrial Units (in operation) in Baikampady Industrial Estate	2.16
3.1	Representative Analysis of imported coal	3.17
3.2	Water Balance of Steel Complex	3.18
3.3	Pollutional loads and other stack input Parameters	3.20
4.1	Temperature Recorded Near Panambur, Mangalore during 18th January to 18th February, 1993	4.7
4.2	Temperature Recorded Near Panambur, Mangalore during 12th March to 18th March, 1993	4.7
4.3	Monthly Rainfall Data of Buntval station for 28 years (from 1960-61 to 1987-88 and for 1992, Rain fall in mm)	4.8
4.4	Humidity Recorded near Panambur, Mangalore during 18th Jan. to 18th Feb., 1993	4.9
4.5	Humidity Recorded near Panambur, Mangalore during 12th March to 28th March, 1993	4.10

4.6	Percentage of wind speeds from various directions during 18th Jan. to 18th Feb.1993 (from 6 am to 1 pm)	4.11
4.7	Percentage of wind speeds from various directions during 18th Jan. to 18th Feb. 1993 (from 2 pm to 9 pm)	4.12
4.8	Percentage of wind speeds from various directions during 18th Jan. to 18th Feb. 1993 (from 10 pm to 5 am)	4.13
4.9	Percentage of number of days wind blowing from during Jan. 1992	4.14
4.10	Percentage of number of days wind blowing from during Feb. 1992	4.15
4.11	Percentage of number of days wind blowing from during March, 1992	4.16
4.12	Percentage of number of days wind blowing from during April, 1992	4.17
4.13	Percentage of number of days wind blowing from during May, 1992	4.18
4.14	Percentage of number of days wind blowing from during June, 1992	4.19
4.15	Percentage of number of days wind blowing from during July, 1992	4.20
4.16	Percentage of number of days wind blowing from during August, 1992	4.21
4.17	Percentage of number of days wind blowing from during September, 1992	4.22
4.18	Percentage of number of days wind blowing from during October, 1992	4.23
4.19	Percentage of number of days wind blowing from during November, 1992	4.24
4.20	Percentage of number of days wind blowing from during December, 1992	4.25
4.21	Cloud Cover during the Year 1992 as Observed at IMD Station Panambur	4.26
4.22	Observations of Meteorology recorded by Mangalore	4.27
4.23	Monthly calm and primary and secondary wind directions during 1992	4.29

5.1	Ambient Air Quality Monitoring Station - Kuvur	5.7
5.2	Ambient Air Quality Monitoring Station - Hotel Kaveri International	5.8
5.3	Ambient Air Quality Monitoring Station - Near Mangalor Port Trust Inspection Bungalow	5.9
5.4	Ambient Air Quality Monitoring Station - Jogatte	5.10
5.5	Base Line Status of suspended particulate matter during Winter season	5.11
5.6	Diurnal variation of SPM for Winter season	5.11
5.7	Base Line Scenario of SO <sub>x</sub> for Winter season	5.12
5.8	Diurnal variation of NO <sub>x</sub> for winter season	5.12
5.9	Diurnal variation of SO <sub>x</sub> for winter season	5.13
5.10	Ambient 'CO' levels by MSA detector Tube Method	5.13
5.11	Ambient air quality during early summer season monitoring station - Kuvur	5.14
5.12	Ambient air quality early summer season monitoring station : Hotel Kaveri International	5.15
5.13	Ambient air quality during early summer season monitoring station : Near New Mangalore Port Trust Inspection Bungalow	5.16
5.14	Ambient air quality for early summer season monitoring station : Jogatte	5.17
5.15	Ambient air quality status of study area during early summer season	5.18
6.1	Water Requirement of the Steel Plant and Captive Power Plant	6.8
6.2	Ground water quality (mg/l) except (pH) (Source : Micro Metal (India)	6.9
6.3	Surface Water Quality	6.11
6.4	Characteristics of Netravati River	6.13
7.1	Location of soil Samples collected from different villages	7.5
7.2	Physical Characteristics of Soil of Study Area	7.6

7.3	Textural Classification of soils of some Village in the study area	7.7
7.4	Chemical Characteristics of Soil of Study Area	7.9
8.1	Land Utilization of Rural part of Study Area as per Census Records 1981	8.11
8.2	Land use of Urban part of Study Area as per Census Records of 1981	8.13
8.3	Land use for 1990-91	8.14
8.4	Land use showing comparative trends during 1981 and 1990-91 as summarised from Tables 8.1 and 8.3	8.15
8.5	Cropping Pattern for 1990-91	8.16
8.6	Irrigation details as per Census Records of 1981 (Rural area only)	8.17
8.7	Plantation under Social Forestry Scheme in differnt villages/road sides during 1979-80 to 1991-92	8.19
8.8	Livestock for 1990-91 as per the Animal Husbandary Department Data	8.20
9.1	Yearwise Data for fish Landings at Mangalore	9.6
10.1	Human settlement in the 10 Km radius area	10.11
10.2	Amenities Available as per Census Records of 1981	10.14
10.3	Literates in study area as per Census Records of 1981	10.18
10.4	Occupational pattern in study as per Census records of 1981	10.20
10.5	Summary of literates and workers in study area	10.23
10.6	Educational Facilities in study area	10.25
10.7	Medical Facilities	10.26
10.8	Drinking Water Facilities	10.27
10.9	Transportation and Approach to Village	10.28
10 10	Literacy Classification	10.29
10.11	Family size distribution by sex and age	10.30
10.12	Public Services	10.31

10.13	Husing Details (House Structure)	10.33
10.14	Households Items in Villages	10.34
10.15	Domestic Appliances and Utilities Available with Families	10.35
10.16	Source of Family income in study area Villages	10.36
10.17	Land Holdings	10.37
10.18	Human Diseases as per PHC and Family Welfare Centre Suratkal Data	10.38
11.1	Noise Levels in the 10 Km Radius Study Area	11.3
11.2	Osha's Permissible Noise Level	11.4
11.3	Indian Standards for Noise (Outside Plant Premises)	11.4
12.1	Stack input parameters and expected quality of emission	12.19
12.2	Pasquill Gifford Stability Classification	12.20
12.3	Variation of Dispersion Coefficient $\sigma_y$ and $\sigma_z$ with distance (proposed by Brigg's for open country)	12.21
12.4	Eight Hourly SPM concentration from (ug/m <sup>3</sup> ) power plant stack	12.22
12.5	Eight Hourly SO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) from power plant stack	12.23
12.6	Eight Hourly NO <sub>x</sub> Concentration (ug/m <sup>3</sup> ) from power plant stack	12.24
12.7	Eight Hourly NO <sub>x</sub> Concentration (ug/m <sup>3</sup> ) from Blast Furnace stack	12.25
12.8	Eight Hourly SO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) from Blast Furnace stack	12.26
12.9	Eight Hourly NO <sub>x</sub> Concentration (ug/m <sup>3</sup> ) from Blast Furnace stack	12.27
12.10	Eight Hourly SPM Concentration (ug/m <sup>3</sup> ) from Coke Oven stack	12.28
12.11	Eight Hourly SO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) from Coke Oven stack	12.29
12.12	Eight Hourly NO <sub>x</sub> Concentration (ug/m <sup>3</sup> ) from Coke Oven stack	12.30

12.13	Eight Hourly SPM Concentration (ug/m3) Sinter Plant stack	12.31
12.14	Eight Hourly SO2 Concentration (ug/m3) Sinter Plant stack	12.32
12.15	Eight Hourly NOx Concentration (ug/m3) Sinter Plant stack	12.33
12.16	Eight Hourly SPM Concentration (ug/m3) Steel Melting Shop stack	12.34
12.17	Eight Hourly SO2 Concentration (ug/m3) Steel Melting Stack	12.35
12.18	Eight Hourly NOx Concentration (ug/m3) Steel Melting Stack	12.36
12.19	Long term SO2 concentration (ug/m3) from power plant stack for the month of January	12.37
12.20	Long term SO2 concentration (ug/m3) from power plant stack for the month of May	12.38
12.21	Long term SO2 concentration (ug/m3) from power plant stack for the month of July	12.39
12.22	Long term SO2 concentration (ug/m3) from power plant stack for the month of October	12.40
12.23	Long term SPM concentration (ug/m3) from Blast Furnace stack for the month of July	12.41
12.24	Long term SPM concentration (ug/m3) from Blast Furnace stack for the month of October	12.42
12.25	Long term SO2 concentration (ug/m3) from Blast Furnace stack for the month of January	12.43
12.26	Long term SO2 concentration (ug/m3) from Blast Furnace stack for the month of May	12.44
12.27	Long term SO2 concentration (ug/m3) from Blast Furnace stack for the month of July	12.45
12.28	Long term SO2 concentration (ug/m3) from Blast Furnace stack for the month of October	12.46
12.29	Long term SO2 concentration (ug/m3) from Coke Oven stack for the month of January	12.47
12.30	Long term SO2 concentration (ug/m3) from Coke Oven stack for the month of May	12.48
12.31	Long term SO2 concentration (ug/m3) from Coke Oven stack for the month of July	12.49
12.32	Long term SO2 concentration (ug/m3) from Coke Oven stack for the month of October	12.50

12.33	Long term NOx concentration (ug/m3) from Coke Oven stack for the month of January	12.51
12.34	Long term NOx concentration (ug/m3) from Coke Oven stack for the month of May	12.52
12.35	Long term NOx concentration (ug/m3) from Coke Oven stack for the month of July	12.53
12.36	Long term NOx concentration (ug/m3) from Coke Oven stack for the month of October	12.54
12.37	Long term SPM concentration (ug/m3) from Sinter Plant stack for the month of July	12.55
12.38	Long term SO2 concentration (ug/m3) from Sinter Plant stack for the month of July	12.56
12.39	Long term NOx concentration (ug/m3) from Sinter Plant stack for the month of January	12.57
12.40	Long term NOx concentration (ug/m3) from Sinter Plant stack for the month of May	12.58
12.41	Long term NOx concentration (ug/m3) from Sinter Plant stack for the month of July	12.59
12.42	Long term NOx concentration (ug/m3) from Sinter Plant stack for the month of October	12.60
12.43	Long term SPM concentration (ug/m3) from Steel Melting Shop stack for the month of January	12.61
12.44	Long term SPM concentration (ug/m3) from Steel Melting Shop stack for the month of May	12.62
12.45	Long term SPM concentration (ug/m3) from Steel Melting Shop stack for the month of July	12.63
12.46	Long term SPM concentration (ug/m3) from Steel Melting Shop stack for the month of October	12.64
12.47	Long term SO2 concentration (ug/m3) from Steel Melting Shop stack for the month of January	12.65
12.48	Long term SO2 concentration (ug/m3) from Steel Melting Shop stack for the month of May	12.66
12.49	Long term SO2 concentration (ug/m3) from Steel Melting Shop stack for the month of July	12.67
12.50	Long term SO2 concentration (ug/m3) from Steel Melting Shop stack for the month of October	12.68

12.51	Long term NOx concentration (ug/m3) from Steel Melting Shop stack for the month of January	12.69
12.52	Long term NOx concentration (ug/m3) from Steel Melting Shop stack for the month of May	12.70
12.53	Long term NOx concentration (ug/m3) from Steel Melting Shop stack for the month of July	12.71
12.54	Long term NOx concentration (ug/m3) from Steel Melting Shop stack for the month of October	12.72
12.55	Effective Eight Hourly SPM concentration	12.73
12.56	Effective Eight Hourly SO2 concentration	12.74
12.57	Effective Eight Hourly NOx concentration	12.75
12.58	Effective long term SPM Concentration for the month of January	12.76
12.59	Effective Long term SPM Concentration (ug/m3) for the month of May	12.77
12.60	Effective Long term SPM Concentration (ug/m3) for the month of July	12.78
12.61	Effective Long term SPM Concentration (ug/m3) for the month of October	12.79
12.62	Effective Long term SO2 Concentration (ug/m3) for the month of January	12.80
12.63	Effective Long term SO2 Concentration (ug/m3) for the month of May	12.81
12.64	Effective Long term SO2 Concentration (ug/m3) for the month of July	12.82
12.65	Effective Long term SO2 Concentration (ug/m3) for the month of October	12.83
12.66	Effective Long term NOx Concentration (ug/m3) for the month of January	12.84
12.67	Effective Long term NOx Concentration (ug/m3) for the month of May	12.85
12.68	Effective Long term NOx Concentration (ug/m3) for the month of July	12.86
12.69	Effective Long term NOx Concentration (ug/m3) for the month of October	12.87

ENVIRONMENTAL IMPACT ASSESSMENT

2 X 50 MW CAPTIVE THERMAL POWER PLANT OF

1.0 MILLION TONNES STEEL PLANT AT MANGALORE

LIST OF FIGURES

<u>Fig. No.</u>	<u>Title</u>	<u>Page. No.</u>
2.1	Mangalore Steel Plant Surroundings	2.17
2.2	The study area showing revenue village	2.18
2.3	The Mangalore Steel Plant and Thermal Power Plant area	2.19
2.4	Location of Industries in study area.	2.20
3.1	Preliminary Steel Plant Layout showing Captive Power Plant	3.28
3.2	Coal Handling System	3.29
3.3	Ash Handling Plant Flow Scheme	3.30
3.4	Composite Water Scheme	3.31
3.5	Typical Flow Sheet of Captive Power Plant	3.32
4.0	Wind rose diagram for the period of 18th January to 18th February, 1993	4.31
4.1	Wind Rose for the month of January, 1992	4.32
4.2	Wind Rose for the month of February, 1992	4.33
4.3	Wind Rose for the month of March, 1992	4.34
4.4	Wind Rose for the month of April, 1992	4.35
ap5	Wind Rose for the month of May, 1992	4.36
4.6	Wind Rose for the month of June, 1992	4.37
4.7	Wind Rose for the month of July, 1992	4.38
4.8	Wind Rose for the month of August, 1992	4.39
4.9	Wind Rose for the month of September, 1992	4.40
4.10	Wind Rose for the month of October, 1992	4.41
4.11	Wind Rose for the month of November, 1992	4.42
4.12	Wind Rose for the month of December, 1992	4.43
5.1	Location of Ambient Air Quality Stations	5.19

6.1	Proposed Sarpadi Barrage & Power House site	6.14
6.2	Ground water sampling locations	6.15
6.3	Surface water sampling locations	6.16
6.4	Alignment of effluent disposal pipeline	6.17
7.1	Soil sampling locations	7.10
11.1	Noise measurement location	11.5
12.1	One hourly SO <sub>2</sub> concentration during January from Captive Power Plant	12.88
12.2	One hourly SO <sub>2</sub> concentration during May from Captive Power Plant	12.89
12.3	One hourly SO <sub>2</sub> concentration during July from Captive Power Plant	12.90
12.4	One hourly SO <sub>2</sub> concentration during October from Captive Power Plant	12.91
12.5	One hourly SO <sub>2</sub> concentration during January from Blast Furnace	12.92
12.6	One hourly SO <sub>2</sub> concentration during May from Blast Furnace	12.93
12.7	One hourly SO <sub>2</sub> concentration during July from Blast Furnace	12.94
12.8	One hourly SO <sub>2</sub> concentration during October from Blast Furnace	12.95
12.9	One hourly SO <sub>2</sub> concentration during January from Coke Oven	12.96
12.10	One hourly SO <sub>2</sub> concentration during May from Coke Oven	12.97
12.11	One hourly SO <sub>2</sub> concentration during July from Coke Oven	12.98
12.12	One hourly SO <sub>2</sub> concentration during October from Coke Oven	12.99
12.13	One hourly SO <sub>2</sub> concentration during January from Sinter Plant	12.100
12.14	One hourly SO <sub>2</sub> concentration during May from Sinter Plant	12.101
12.15	One hourly SO <sub>2</sub> concentration during July from Sinter Plant	12.102

12.16	One hourly SO <sub>2</sub> concentration during October from Sinter Plant	12.103
12.17	One hourly SO <sub>2</sub> concentration during January from Steel Melting Shop	12.104
12.18	One hourly SO <sub>2</sub> concentration during May from Steel Melting Shop	12.105
12.19	One hourly SO <sub>2</sub> concentration during July from Steel Melting Shop	12.106
12.20	One hourly SO <sub>2</sub> concentration during October from Steel Melting Shop	12.107
12.21	Isopleths of effective SPM concentrations for the month of January	12.108
12.22	Isopleths of effective SPM concentrations for the month of May	12.109
12.23	Isopleths of effective SPM concentrations for the month of July	12.110
12.24	Isopleths of effective SPM concentrations for the month of October	12.111
12.25	Isopleths of effective SO <sub>2</sub> concentrations for the month of January	12.112
12.26	Isopleths of effective SO <sub>2</sub> concentrations for the month of May	12.113
12.27	Isopleths of effective SO <sub>2</sub> concentrations for the month of July	12.114
12.28	Isopleths of effective SO <sub>2</sub> concentrations for the month of October	12.115
12.29	Isopleths of effective NO <sub>x</sub> concentrations for the month of January	12.116
12.30	Isopleths of effective NO <sub>x</sub> concentrations for the month of May	12.117
12.31	Isopleths of effective NO <sub>x</sub> concentrations for the month of July	12.118
12.32	Isopleths of effective NO <sub>x</sub> concentrations for the month of October	12.119
14.1	Proposed Green Belt Plantation	12.26

ENVIRONMENTAL IMPACT ASSESSMENT

2 X 50 MW CAPTIVE THERMAL POWER PLANT OF

1.0 MILLION TONNES STEEL PLANT AT MANGALORE

ACKNOWLEDGEMENTS

M/s Jaiprakash Engineering and Steel Co. Ltd (JESCO) proposes to set up an Integrated 1.0 million tonnes Steel plant and 2x50 MW captive power plant near Mangalore, Karnataka.

To assess the likely impacts due to setting up of the steel plant and Captive Thermal Power Plant M/s International Design Engg. Associates Ltd (IDEA) on behalf of JESCO retained M/s EST Consultants (P) Ltd to prepare Environmental Impact Assessment Studies Report covering various components of the environment and to prepare an Environmental Management Plan (EMP) based upon the data primarily provided by the client.

The report presents baseline data for one season for air, water, land, biological, socio-economic components of the environment. The environmental concerns are identified and prediction of impacts due to the proposed Integrated steel plant and captive power plant are carried out. Finally, environmental concerns are presented and management measures are proposed.

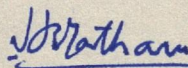
The co-operation and help rendered by JESCO and IDEA on the technical aspects for preparing the EIA report are gratefully acknowledged. During the field-work, various Departments of Mangalore taluk, District Kannad, Karnataka provided a lot of help and information which is thankfully acknowledged.

Thanks are acknowledged to the following team of EST Consultants (P) Ltd. and outside organizations who

contributed to the field data collection, data compilation, and preparation of the report:

Dr H.S. Matharu Director	:	Project Coordinator & Report Preparation
Sh. S.S. Pandey Agricultural Scientist	:	Agricultural and Socio- economic data collection and processing
Sh Srinivas Verma Environmental Engineer	:	Mathematical Modelling
Ms Ateeq Khan, Environmental Scientist	:	Report updation
Smt Gracy Kutty and Sh Suresh	:	Word Processing
Sh Rakesh Srivastava	:	Overall Assistance
M/s Micro Metal (India)	:	Ambient Air Quality and Meteorological data collection.
M/s JESCO	:	Field data collection and technical information

for EST Consultants (P) Ltd.,



(Dr. H.S. Matharu)  
Director

## ENVIRONMENTAL IMPACT ASSESSMENT

### 2 X 50 MW CAPTIVE THERMAL POWER PLANT AT MANGALORE

#### CHAPTER - 1

#### 1.0 INTRODUCTION

#### 1.1 Preamble

M/s Jaiprakash Engineering and Steel Company Ltd. (JESCO) proposes to set up one million tonnes capacity steel plant and 2 X 50 MW captive thermal power plant at Baikampady near Mangalore in Dakshina Kannada district of Karnataka state to meet the power requirement of JESCO Steel Plant.

The proposed site is located 13 kms north of Mangalore city. In order to assess the likely impact of the captive thermal power plant M/s International Design Engineering Associates Ltd., New Delhi on behalf of M/s Jaiprakash Engineering and Steel Co. Ltd. retained M/s EST Consultants (P) Ltd., New Delhi to prepare Environmental Impact Assessment Report based upon one season data and to advise them on the environmental management measures to minimise adverse impacts.

#### 1.2 Scope of the Assignment

The Scope of the Study included preparation of Environmental Impact Assessment and Environmental Management Plans for the thermal power plant. Barring items (iii), (iv) and (vi) to (ix) all field data was provided to EST Consultants by the client. The report covers the following Scope of the work:

- (i) The study covered an area of 10 km radius taking the epicentre of the proposed captive power plant. The study was conducted through reconnaissance visits and placement of field team at site.

- (ii) Field studies to characterize water (both underground and surface sources), Noise and soil environment. Sampling of water and soils at different points and their analysis for relevant parameters. Ambient Air quality and meteorological data collection.

One set of ground water and river water samples at suitable locations during winter season was collected. In all 15-20 ground water and 8-10 surface water samples were collected and analysed for physical & chemical parameters and major anions and cations.

Noise level measurements at 20-25 points in the 10 km radius area including the core area and sensitive locations such as residences, public places etc.

Soil samples were analysed for physical characteristics such as pH, b.d., Porosity, WHC etc. The chemical analysis included major anions and cations.

- (iii) Topographical and geological features of the study area were characterised. Past data on hydrology was studied to establish the availability of water with respect to other users.
- (iv) Published data was obtained on land-use pattern, agricultural production, forests and wildlife, human Health and population. Wherever necessary the information was supplemented by field data.
- (v) Socio-economic conditions and living standards, occupational patterns, growth of industry, amenities, etc. were studied through interviews with a cross section of population supplemented with published data.
- (vi) An inventory of pollution sources in the study area with particular attention to existing units was prepared and impacts of existing emissions and effluents on the environment have been examined and impacts due to proposed plant are superimposed.

- (vii) Mathematical modelling for air pollutants dispersion to predict the ground level concentrations due to captive power plant and steel plant stacks under different meteorological conditions.
- (viii) Preparation of environmental management plans including green belt plantation plans, examination and augmentation of control systems, environmental monitoring plan, etc.
- (ix) All field investigations for existing base line status and evaluations of existing mitigation system were carried out from January to March, 1993.

### 1.3 Governmental Clearances

#### 1.3.1 Letter Of Accord

The Government of Karnataka vide their order No. CI 21 SPI 92, BANGALORE, DATED 15-6-92 (Annexure 1.1) has accorded sanction for the proposed project of Integrated Steel Project at Mangalore (which will also house the 2x50 MW Captive Power Plant) with an cumulative investemnt of Rs 2000 crores. The order states that the Karnataka Industrial Area Development Board shall acquire and provide 1600 acres of land, the Revenue Department shall grant 286 acres of Government land forming part of total land identified for the project, free of cost. Housing and Urban Department shall take necessary action for effecting the change of land use in respect of 792 acres presently classified as "Agricultural Zone" to "Industrial Zone". The KIADB shall provide water for the project through the combined water-supply-cum power generation project to be implemented by KPC/KUWS & DB at Sarpadi across Netravati River. The Karnataka Electricity Board shall provide 4 MW power during construction period and provide grid support of 25 MW for start/stop operation and in times of emergencies.

1.3.2

NOC by the State Pollution Control Board:

The Karnataka State Pollution Control Board, Bangalore vide their letter no. KSPCB/CFE/IND/AE/DEO-6/93-94/152 dated 6-4-93 (Annexure 1.2) have granted site clearance for the proposed one million tonne per annum integrated steel plant at Mangalore provided the industry complies with the following conditions:

- 1) The industry shall not plan any industrial activity within 100 mts or the width of the creek, river or back water whichever is less from H.T.L.,
- 2) The minimum distance between the railway line and industrial activity shall be 0.5 KM or as decided in consultation with railway authorities.
- 3) The industry shall plan and take up extensive afforestation measures, so that a dense green belt around the factory area is maintained.
- 4) The Kudumbur Hole is the main drainage system in the area which has to be maintained.
- 5) There is a distinct possibility of higher level of flooding in the adjoining areas when the present site is not available for backup of flood water due to the establishment of the industry. As agreed by the industry a detailed study has to be organised through the college of Engineering, Roorkee, about the likely flooding of the area due to the establishment of the proposed industry and the appropriate control measures to see that the other habitating areas in the vicinity and the ecosystem is not disturbed. Low lying habitations are therefore required to be identified and moved to higher grounds. A proper and detailed drainage plan for the entire area should be submitted to the Board for approval.

- 6) The industry shall furnish the survey Nos. alongwith the survey map of the land acquired soon after the aquisition proceedings are completed.
- 7) The industry shall conduct pre pollution studies at the proposed site and the likely discharge points in the Arabian sea through the Fisheries college, Mangalore or any other recognised institution in this field.
- 8) The industry shall get the study conducted through National Institute of Oceanography, Goa to locate the appropriate point in the Arabian Sea for the discharge of trade effluent after treatment from the industry. This should include the dispersion studies also, to ensure safety of marine life after such discharges.
- 9) There should be no dumping of solid waste liable to reach the Gurpur river or Gurpur-Netravathi estuary.
- 10) The mode of disposal of solid waste and the area selected for the same should be got approved by the Board duly furnishing the required information.
- 11) The issue of consent for establishment will be considered after the receipt of complete details of air pollution control and water pollution control measures and other associated details proposed to be adopted by the industry.
- 12) The project is to be cleared for siting as well as all other aspects of environment by the committee constituted by Karnataka State Government.

**1.3.3 Site clearance by State Department of Environment**

The Department of Ecology & Environment and Forest in their special meeting held on 8-4-93 has accorded site clearance of the proposed one million tonnes per annum integrated steel plant at Mangalore Vide NC: DEE 117 ECO 92 dated 5-5-93 subject to certain conditions stated in the above letter placed at Annexure 1.4.

## PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA

Sub: Proposed project of M/s Jaiprakash Industries Ltd., -  
Integrated Steel Plant Project at Mangalore at a cost  
of Rs. 2000 crores.

Ref: Letter No. AS/1305/92 dated 15-5-92 from Ministry  
of Steel, Government of India.

-----

## PREAMBLE

1 In view of the new economic policy of Government of India and the thrust given to new industrial investment, M/s. Jaiprakash Industries Ltd., who are engaged in major civil construction of Irrigation and power projects, cement manufacturing etc, have come forward to set up a Port based Steel Plant in Karnataka with an investment of Rs. 1200 crores initially with a capacity of 0.5 million tonnes in the first phase and to be upgraded into one million tonne capacity with an investment of Rs. 2000 crores (cumulative) in the second phase.

2 In the 6th H.L.C. meeting for clearance of projects of more than Rs. 50 crores investment held under the Chairmanship of the HOn'ble Minister for Medium and Large Industries on 7-5-92, has considered the project proposals of M/s. Jaiprakash Industries Ltd., for establishment of integrated Steel Plant Project at Mangalore.

3 The Committee has examined the proposals of M/s. Jaiprakash Industries Ltd., in depth and has made various recommendations.

## GOVERNMENT ORDER NO. CI 21 SPI 92, BANGALORE, DATED 15-6-1992

The Government have examined these recommendations of the H.L.C. and are pleased to accord sanction/order for the following:

- a) Karnataka Industrial Area Development Board shall acquire and provide 1600 acres of land out of total of 1842.51 acres to be acquired in Panamhur, Kenjar, Thokur, Baikampady and Kulai villages.
- b) The Revenue Department shall grant 286 acres of Government land forming part of the total land identified for the project, free of cost.

- c) Housing and Urban Development Department shall take necessary action for effecting the charge of land use in respect of 792 acres presently classified as "Agricultural Zone" to "Industrial purpose" and to effect suitable amendments/modifications in the draft CDP/ODP of the Mangalore Urban Development Authority.
- d) The Karnataka Industrial Area Development Board shall provide water for the project through the combined water-supply-cum-power generation project to be implemented by KPC/KUWS & DB at Sarpadi across Netravathi River and in the absence of the project coming through, industries like MRPL, Jaiprakash Industries and Canara Steels could jointly implement the water supply project only to meet their requirements of water according to their individual needs and on cost sharing basis.
- e) The Company shall meet the 100% power requirement of 80 MW by captive generation.
- f) The Karnataka Electricity Board shall provide 4 MW power during the construction period.
- g) The Karnataka Electricity Board shall provide with grid support of 25 MW for start/stop operation and in times of emergencies.
- h) Commrc.Inds. Depart. will take necessary action to forward to Government of India under Section 11(4) of the MMRD Act, 1957 for allocation of mining areas containing about 100 million tonnes of iron ore to meet the company's captive iron ore needs for production purposes only for a maximum period of 20 years as per the provisions of Section 8 of the MMRD Act, 1957, out of the area forming part of Ramanadurga Mines at Sandur Taluk, Bellary District. The Director, Mines & Geology to work out of the extent of area required depending upon ore concentration and accordingly identify the area in the interest of best utilisation of mineral resources of the State.

To execute actual mining leases under Rule 31 of Minor Minerals Concession Rules, 1960 in favour of the company subject to the following conditions:-

- i) the entrepreneurs commence project implementation/construction work of the steel plant at site in Mangalore;
- ii) the company ties up necessary finance for the project to the satisfaction of the State Government;
- iii) the iron ore mining area allotted to the company should be used only for its captive production purposes for the steel plant at Mangalore and the iron ore mined should not be diverted for any other purposes.

limestone of 40 million tonnes at Bagalkot.

- j) Commrc. & Inds. Dept. will also take necessary action to recommend to Government of India under Section 11(4) of the MMRD Act, 1957, for sanction of need-based mining leases so as to meet the company's requirement of dolomite of 20 million tonnes and to permit to operate mining of limestone and dolomite leases only after commencement of construction work of the plant at Mangalore,
- k) The Government also orders for the grant of the following incentives/concessions:-
- i) 100% exemption from payment of KST & CST on sale of finished goods for a period of 12 years from the date of commencement of production for the first phase of the project with a capacity of 0.50 million tonnes. This may be increased by 2 years so as to bring it to a maximum of 14 years after implementation of the second phase of the project to increase the capacity from 0.50 to 1.00 million TPA.
  - ii) 100% exemption from payment of Purchase tax on all raw materials, pellets, fluxes, limestones, ferro alloys, components, consumables etc., initially for a period of 12 years and to be increased by additional 2 years so as to bring it to a maximum of 14 years after implementation of second phase of the project to reach the capacity of 1.00 million TPA.
  - iii) Exemption from payment of Entry Tax/Octroi (if it were to be introduced in future) on all raw materials like iron ore, pellets, fluxes, limestone, dolomite, ferro alloys, refractories, consumables and finished products, machinery, plant and equipments and other productive assets acquired for implementing the project initially for a period of 12 years and to be increased by additional 2 years so as to bring it to a maximum of 14 years.

This Order is issued with the concurrence of Finance Department vide its Un-Official Note no. FD 833 ESP-1/92 dated 6-6-1992.

By order and in the name of the  
Governor of Karnataka,

Sd/-T.R.Renukaadhya, 15/6/92  
Under Secretary to Government (ID),  
Commerce and Industries Department.

- Vidhana Soudha, Bangalore-1.
- 2) The Commissioner & Secretakry to Govt. Energy Dept.  
M.S. Building, Bangalore-1.
  - 3) The Commissioner of Commercial Taxes, Vanijya Therige Bldg.  
K.G. Road, Bangalore-9.
  - 4) The Secretary to Govt. Housing & Urban Development Dept.  
M.S. Building, Bangalore-1.
  - 5) The Deputy Commissioner, D.K. District.
  - 6) The Commissioner for Industrial Development & Director of Industries & Commerce,  
Nrupathunga Road, Bangalore-1.
  - 7) The Chairman & Managing Director, Kamatake State Industrial Investment &  
Development Corpn. MSIL House, Bangalore-52.
  - 8) The Chairman & Managing Director, KEONICS, Race Course Road, Bangalore-1.
  - 9) The Chairman, Karnataka State Pollution Control Board, Bangalore.
  - 10) The Chairman, Karnataka State Financial Corporation, MG Road, Bangalore-1.
  - 11) The Chairman, Karnataka Electricity Board, Cauvery Bhavan, Bangalore-9.
  - 12) The Director, Mines & Geology Dept., Bangalore.
  - 13) The Executive Member, Kamatake Industrial Area Development Board, Bangalore.
  - 14) The Deputy Secretary to Govt. Revenue Dept. (Land Grant), M.S. Building, Bangalore-1.
  - 15) The Addl. Divisional Manager, Southern Railways, Bangalore.
  - 16) M/s. Jaiprakash Industries Ltd.,
  - 17) The P.S. to the Hon'ble Minister ofor Large & Medium Industries, Vidhana Soudha,  
Bangalore-1.
  - 18) The Under Secretary to Govt. Cabinet Section, with reference to C.Note No. 356/92.
  - 19) The Section Guard File/spare copies.

Annexure 1.2

**KARNATAKA STATE POLLUTION CONTROL BOARD**

8,7 & 8th Floors  
Public Utility Building,  
Mahatma Gandhi Road,  
BANGALORE - 560 001.  
Karnataka. INDIA.

KSPCB/ CFE/DK/IND/AE/DEO-6/93-94/152      Dated 6-4-93

To

The Chairman and Managing Director,  
M/s. Jaiprakash Engineering Industry,  
7th Floor, Al Tower,  
Golden Enclave, Airport Road,  
BANGALORE - 17

Sir,

Sub.: Site clearance for the proposed one million  
tonne per annum integrated steel plant at  
Mangalore

- Reg.: 1) Your letter No. JESCO/BNG/6.10/ dated 31-3-93
- 2) Proceedings of the 103rd Technical Advisory  
Committee meeting of the Board, held on  
3-4-93.

Citing reference to the correspondence ending with your  
letter noted under reference above, and in supersession of  
the Board's earlier letter No. KSPCB/CFE/DK/IND/AE/TA-  
5/92-93/9206 Dated: 15-3-93, the proposed location for  
setting up of one million tonne per annum capacity  
integrated steel unit at Mangalore in areas covered by  
villages Baikampady, Panumbur, Kongar, Thokur and Kulai to:  
an extent of about 1600 acres as per the plan furnished by

you to the Board is generally acceptable, provided, the industry complies with the following conditions:-

- 1) The industry shall not plan any industrial activity within 100 mts or the width of the creek, river or back water whichever is less from H.T.L.,
- 2) The minimum distance between the railway line and industrial activity shall be 0.5 KM or as decided in consultation with railway authorities.
- 3) The industry shall plan and take up extensive afforestation measures, so that a dense green belt around the factory area is maintained.
- 4) The Kudumbur Hole is the main drainage system in the area which has to be maintained.
- 5) There is a distinct possibility of higher level of flooding in the adjoining areas when the present site is not available for backup of flood water due to the establishment of the industry. As agreed by the industry a detailed study has to be organised through the college of Engineering, Roorkee, about the likely flooding of the area due to the establishment of the proposed industry and the appropriate control measures to see that the other habitating areas in the vicinity and the ecosystem is not disturbed. Low lying habitations are therefore required to be identified and moved to higher grounds. A proper and detailed drainage plan for the entire area should be submitted to the Board for approval.
- 6) The industry shall furnish the survey Nos. alongwith the survey map of the land acquired soon after the aquisition proceedings are completed.
- 7) The industry shall conduct pre pollution studies at the proposed site and the likely discharge points in the Arabian sea through the Fisheries college, Mangalore or any other recognised institution in this field.

- 8) The industry shall get the study conducted through National Institute of Oceanography, Goa to locate the appropriate point in the Arabian Sea for the discharge of trade effluent after treatment from the industry. This should include the dispersion studies also, to ensure safety of marine life after such discharges.
- 9) There should be no dumping of solid waste liable to reach the Gurpur river or Gurpur-Netravathi estuary.
- 10) The mode of disposal of solid waste and the area selected for the same should be got approved by the Board duly furnishing the required information.
- 11) The issue of consent for establishment will be considered after the receipt of complete details of air pollution control and water pollution control measures and other associated details proposed to be adopted by the industry.
- 12) The project is to be cleared for siting as well as all other aspects of environment by the committee constituted by Karnataka State Government.

The receipt of this letter may please be acknowledged.

Yours faithfully,

Sd/-

MEMBER SECRETARY.

cns. 6-4-93.

Annexure 1.3

J-11012/30/92-IA-II(I)

To

07-09-92

Shri V.S Nanjundaiah  
Adviser (Technical),  
Jaiprakash Engineering and Steel Co. Ltd.,  
50, 1st Crossing, 4th Main  
HAL III Stage, Indiranagar,  
Bangalore - 560 075.

Sub.: One million Tonne integrated Steel Plant at  
Mangalore- Provisional clearance req.

Sir,

This has reference to your letter No.JESCO/BNG/9.03 dated 28th July, 92 furnishing a copy of above proposal. We have examined the report and observations are as follows:

1. No attempt has been made to assess impact of the project on water (hydrological regime, ground & surface waters), soil, land use, agriculture, fisheries, flora and fauna, community health, other sensitive targets.
2. Besides the steel plant, captive mining of iron ore, dolomite and lime stone are also envisaged. The State Government is yet to finalise allocation of mine areas.
3. No Objection Certificate from the Karnataka State Pollution Control Board is yet to be obtained.

4. Three options/combinations are being considered for drawal of water. No final scheme is yet ready. Even there is no commitment/agreement which permits the industry to tap water from the river(s).

Though it has been mentioned in the report that adequate water is available in rivers Gurupur and Netravati, but no data are available to substantiate this statement.

Rain water harvesting has been proposed to collect water and store in a reservoir (58 ha) of 11.6 Lakh m<sup>3</sup> capacity. What type of catchment will be needed and its impact on natural drainage of the area is not known.

5. Water requirements for green belt development and maintenance, fire fighting and construction have not been included.
6. It is not clear whether 20,300 m<sup>3</sup>/hr water requirement is for phase I (i.e. 0.5 million tonne capacity) or for phase I and II both.
7. Recycling of cooling water has been proposed in case of Netravati water only. What are the problems in case of Gurupur source ?
8. Water consumption (Process - 203 m<sup>3</sup>/hr & cooling - 20075 m<sup>3</sup>/hr) and waste water discharge (cooling - 20075 m<sup>3</sup>/hr and processing - 203 m<sup>3</sup>/hr) figures are identical. Will there be no evaporation losses etc. Needs clarification.
9. All contaminated waters are to be released to sea. Plant outfall point is stated to be 4 Kms from the Arabian Sea. It has also been proposed to provide pipeline and open channel for effluent discharge. Picture is not very clear. Are you suggesting pucca/lined open channel upto tidal line and then free flow into the sea or is it that after the pipeline the effluent will be discharged on land finding its way

into the sea or the effluents will flow first through the open channel and through pipeline deep into the sea ? Information on route & length of pipeline and open channel is not available. Where and how other industries (MRPL, MCFL, Pellet Unit, Canara Steel) in this area are discharging/propose to discharge their effluents ?

10. Two different figures (50 ha and 40 ha) have been indicated in the questionnaire (P3 and P11) in respect of town ship land.
11. Information on plant species selected/proposed for green belt development is not given.
12. State-of-the-art technology is not being adopted. For example wet quenching has been proposed for coke. No new plants should use conventional methods/technology when cleaner technologies are available. Main emphasis should be on adoption of clean technologies which are energy efficient as also produce minimum wastes.

In view of the above, considerable amount of data and clarifications are needed. For examining the project, we need the following documents (18 sets):

1. Detailed Project Report (One Copy)
2. Revised filled-in Questionnaires
3. Comprehensive EIA report based on three seasons data for the year for air, water, land, noise, biological and socio-economic components of the environment. The EIA report should also cover the impacts likely to be caused due to the existing and proposed industries in the study zone of 10 KM as the area is experiencing major developmental activities.
4. Comprehensive Environmental Management Plan along with Risk Assessment and Disaster Management Plan.

5. Detailed Green Belt Development Plan
6. Oceanographic study indicating the existing marine life and likely impacts of the effluent discharge on marine eco-system.
7. Report on availability of water at source(s) especially covering water balance at intake point, lean season flow data (last 20 years), all competing users, present and proposed commitments made by the concerned State Department and downstream and upstream users..
8. Detailed note on state-of-the-art technology available vis-a-vis technology proposed to be adopted and the basis for its selection.
9. No Objection Certificate from the State Pollution Control Board and a copy of an agreement reached between the State Government and the industry regarding drawal of water from the rivers.
10. Details of burrow area/high grounds from where fill material is to be obtained and impact on natural drainage pattern along with rehabilitation plan for the quarrying site and contour map.

The requisite details and clarification may be submitted to us in one go. It may be noted that the project will be deemed to have been received only after receipt of the complete information as mentioned above. No development work at site including the civil work should be undertaken without prior approval of this Ministry.

It is also to inform you that there is no provision to accord provisional clearance as requested by you. Proposals in respect of mining activities and captive power plant should also be submitted to this Ministry for obtaining environmental clearance.

Yours faithfully,

Sd/-  
(K.K. JAIN)  
Jt. Director.

Copy to :-

1. Chairman, Karnataka State Pollution Control Board,  
No. 25, 6th & 7th Floor, Public Utility Building,  
Mahathma Gandhi Road, Bangalore - 560 001.
2. Secretary, Department of Commerce and Industries,  
Government of Karnataka, Nrupathunga Road,  
Bangalore-560 001.

Annexure 1.4

FROM:

The Secretary to Government,  
Dept. of Ecology & Environment and Forest

TO:

The Chairman and Managing Director,  
M/s Jaiprakash Engineering industry,  
7th floor, A1 Tower,  
Golden Enclave, Airport Road,  
BANGALORE-17.

Sir,

Sub: Site clearance for the proposed one million ton  
per annum integrated steel plant at Mangalore.

- Ref: 1) Your letter No.JESCO/BNG/5-01/(B)  
dated 31-3-1993  
2) Letter No.CFE/DK/IND/AE/DEO-6/93-94/152  
dated 6-4-93 from Chairman, K.S.P.C.B.

I am directed to inform that the Environment Clearance Committee of this Department has assembled on 8-4-1993. After careful consideration has agreed to issue site clearance for the proposed one million ton per annum integrated steel plant to this industry at its special meeting held on 8-4-1993 subject to the fulfilment of the conditions laid down by the Karnataka State Pollution Control Board, Chief Inspector of Factories and Boilers and Director of Mines and Geology if necessary and the following conditions:

- 1) The industry shall not plan any industrial activity within 100 mts or the width of the creek, river or back water whichever is less from H.T.L.
- 2) The minimum distance between the railway line and industrial activity shall be 0.5 km or as decided in

consultation with railway authorities.

- 3) The industry shall plan and take up extensive afforestation measures, so that a dense green belt around the factory area is maintained.
- 4) The Kudumbur Hole is the main drainage system in the area which has to be maintained.
- 5) There is a distinct possibility of higher level of flooding in the adjoining areas when the present site is not-available for backup of flood water due to the establishment of the industry. As agreed by the industry a detailed study has to be organised through the college of engineering Roorkee, about the likely flooding of the area due to the establishment of the proposed industry and the appropriate control measures to see that the other habitating areas in the vicinity and the ecosystem is not disturbed. Low lying habitations are therefore required to be identified and moved to higher grounds. A proper and detailed grainage plan for the entire area should be submitted to the Board for approval.
- 6) The industry shall furnish the survey Nos. alongwith the survey map of the land acquired soon after the acquisition proceedings are completed.
- 7) The industry shall conduct pre pollution studies at the proposed site and the likely discharge points in the Arabian sea through the fisheries college, Mangalore or any other recognised institution in this field.
- 8) The industry shall get the study conducted through national Institute of Oceanography, Goa to locate the appropriate point in the Arabian Sea for the discharge of trade effluent after treatment from the industry. This should include the dispersion studies also, to ensure safety of marine life after such discharges.

- 9) There should be no dumping of solid waste liable to reach the Gurgur river of Gurgur Netravati estuary.
- 10) The mode of disposal of solid waste and the area selected for the same should be got approved by the Board duly furnishing the required information.
- 11) The issue of consent for establishment will be considered after the receipt of complete details of air pollution control and water pollution control measures and other associated details proposed to be adopted by the industry.
- 12) Any other conditions that are imposed under the Environmental Protection Act shall be adhered to.

The issue of clearance/consent of this department will be considered only after the complaints report from you.

The receipt of this letter may please be acknowledged.

Yours faithfully,

(S.P. SHANKARACHAR)  
Under Secretary to Govt.,  
Dept. of Forest, Ecology & Environment

## CHAPTER - 2

### 2.0 PLANT LOCATION AND DESCRIPTION OF ENVIRONMENT OF THE STUDY AREA

#### 2.1 Description of the Site and Surrounding area:

The Plant is proposed to be located near Mangalore (South-West coast of Karnataka) in the South Kanara District, Karnataka State. The site is situated at 12 deg - 55'N latitude and 74 deg - 50'E longitude. The site falls at about 13 kms in the North direction from the Mangalore city and is linked to it by N.H. 17 and railways with meter gauge and broad gauge of the southern railway. Mangalore is linked to Cochin, Coimbatore and Madras by broad gauge and to Bangalore by meter gauge of the southern railways. It is linked by air route network of the country and has domestic services to Bombay and Bangalore. The aerodrome of National Airports Authority of India (NAA) is located at Bajpe about 22 km from the city by road.

##### 2.1.1 The South Kanara District :

The South Kanara District in which the plant is proposed to be located is an essentially agricultural district with about 62.2% of the population dependent on cultivation. About 40% of the population are dependent upon other occupations such as transport industries connected with fish curing, manufacture of fish oil etc. The district is drained by major west flowing rivers such as Kollur river, Chakra river, Haladi river, Sitanadi, Mulki river, Swarna Nadi, Kumara Dhara, Payaswini, Netravati & Gурpur rivers. West flowing rivers constitute the drainage net of the district.

2.1.2 The proposed site of the Plant is located partly in villages Kulai, Thokur and Kenjar and Panambur - Baikampady Industrial area. It is surrounded on the

east and north sides by the railway track of the Southern Railway running between Mangalore town and New Mangalore Port. On the Southern side there is the river Gurupur while on the west it is adjoining the KIADB Panambur-Baikampady Industrial area. The site terrain is generally low-lying with ground elevation ranging from 1.00 to 2.5 m. On the western side there are some undulating high grounds with elevations upto 30 m. Around 480 acres of the area is marshy. The area inbetween the marshes and plantations are paddy fields. The above features are somewhat similar for the study area except area falling along sea coast (inbetween NH-17 and Arabian Sea) which is flat.

The main drainage source of the area is Gurpur river which flows along the site and to which joins other minor drains or nallahs. The river Gurpur joins river Netravati and finally the Arabian sea.

A small tributary also passes through the proposed site which is locally known as Kudumbur hole. Kudumbur hole joins river Gurpur near Panambur village behind Mangalore Fertilizers and Chemicals Ltd.

The appraisals of the existing land use in agriculture in different villages reveal that the farmers grow 2-3 crops in a year with paddy (*Oryzae sativa*) as a major cereal crop. Paddy is grown in kharif (April-August), rabi (September-December) and summer (January-March) whereas in rabi and summer seasonal pulses like mung (*Vigna radiata*) and urad (*Phaseolus mungo*) are grown. General crop pattern in all villages is paddy-paddy-pulses. Coconut plantations are the prominent feature of most villages on bunds and at the outer periphery of the farms.

There are no pasture lands in villages and cattle needs are met from foliage and grass grown on the nearby wastelands. Cashew nut, eucalyptus, casuarina are the major plant species on low hills. Mango and cashew nut

trees are also grown on a large scale. No reserve forest and wild life sanctuary is located within the study area.

## 2.2 Study Area For Present EIA Studies

Keeping in view the nature and size of the complex, the various guidelines available and based on past experience of EST, it was decided to cover an area of 10 km radius from the centre of the proposed site for the purpose of present study. The study area covers 58 villages as listed in Table 2.1 with their location and distance/direction with reference to the project site. Fig. 2.1 shows the location of Mangalore Steel Plant w.r.t to Mangalore city, Fig. 2.2 shows the revenue villages of the entire study area, Fig. 2.3 shows the proposed site and Fig. 2.4 shows the location of industries in the study area. The field data collection and all observations hence pertains to this 10 km radius study area.

## 2.3 Brief Profile of the Study Area

Approximately half of the study area lies on the Arabian Sea. Of the other half major area comes under Mangalore taluk.

The National Highway No. 17 and 48 pass through the study area. These provide approach to places like Bombay, Trivandrum and Bangalore. Besides, there are two State Highways 64 and 25 connecting the place with nearby taluk and district headquarters.

On the Western side and beyond the KIOCL/NMPT area there is the Arabian sea and at approximately 60 km distance on the east lies the Western Ghat ranges.

By virtue of its central location on the west coast between Mormugoa and Cochin, Mangalore has a long maritime history of its own. The old port is located on

the left bank of Gurupur river and operates for a period of 8 months a year. The monsoon period makes the sea very rough due to which the old port remains closed.

After construction of an all weather deep port at Panambur the sea trading through this area increased manifold. Thus, the city and its surrounding has a long history that is port based.

New Mangalore Port Trust (NMPT) is one of the eleven major ports of the country which is located very close to the proposed plant.

#### 2.4 External Infrastructure

For the project the existing Southern Railway will be utilised for incoming and outgoing materials except those which are imported/exported through Mangalore Port. Necessary supplementation on roadways will be through the existing National Highway No. 17.

The question relating to the site for the location of the steel plant within Karnataka led to the conclusion that a site if made available next to the New Mangalore Port would be ideal because of the following considerations;

- i) As the Project is to be based on import of 100% of the requirement of coke or coking coal the project site should be Port-based and should be so located that the coal can be moved by conveyors to the coal storage yard of the plant.

This would reduce handling costs.

The New Mangalore Port authorities have confirmed that they would be prepared to construct a separate jetty for handling the coal ships - two at a time. They have also suggested that the NTPC and the Steel Project

can provide the necessary funds to the port as term loans.

2.5

Water requirement

It is decided to go in with raw water supply from river Netravati at Sarpadi, where Karnataka Power Corporation of Government of Karnataka propose to build a barrage. Karnataka Power Corporation has made comprehensive study on the water availability and prepared a project report for the barrage at Sarpadi. This barrage with full reservoir level of EL 23.50 m will have a total storage of 47.9 million M3 which includes 22.3 million M3 of live storage to meet the ultimate water supply requirements of Mangalore and other industries during the lean months. The river has adequate flows for 8 to 10 months to meet the irrigation and water supply. Even during the dry period the river Netravati at this point has over 8 cu.mecs surface flow which will ensure availability of water for the various industries besides down stream drinking water needs.

Water in the thermal power station is required for circulating water/cooling tower make up, circulating water for cooling closed circuit bearing, boiler make up, plant potable water, plant service water, fire fighting water, and ash handling water.

The break up of consumptive water use for the power plant is as follows :

Cooling tower make up	490
Boiler make up (DM water)	27
Plant potable	6
Plant service	(20)*

Ash handling water, spray for Coal dust suppression, afforestation	(30 + 90)*
AC Plant (Evaporation cooling loss)	12
	-----
Total consumptive requirement	535 m3/hr
	-----

\* Taken from CT blow down line.

Total water in circulation for the steel plant including captive power plant will be 60,000 m3/hr, while make up water for cooling tower will be 2300 M3/hr. This make up water will be drawn from Sarpadi dam on Netravati River.

The water required in various process in the plant may be used once and discharged or reused or recycled. In the once used system, the water used once will be let out / discharged. On the other hand, in the recycling system, all the water used in the process production is recycled after necessary treatment. Recycling may be a closed loop system for individual process production or central closed circuit system for the whole plant. The best way of preventing any negative effect on water resources is to have a completely closed water recycling system.

## 2.6

### Other Industries in the Study Area

There are three major industries (Table 2.1) besides various medium (Table 2.2) and small scale industries and city domestic sewage treatment plant which constitute sources of pollution within 10 km radius around.

The three existing major industries are:

- M/s Kudremukh Iron Ore Company Ltd.
- New Mangalore Port Trust and
- M/s Mangalore Chemicals and Fertilisers Ltd.

In addition a 3.0 MMPTA Mangalore Refineries and Petrochemical Complex is proposed to be set up north of proposed plant.

2.6.1 M/s Kudremukh Iron Ore Company Ltd (KIOCL)

Mining of iron ore, magnetite and haemetite containing about 38-40% Fe, is carried out at Kudremukh. Beneficiated slurry containing 65% solids in transported by 67 km long pipeline to Mangalore. The plant processes about 15000 TPD of ore.

The slurry is filtered and the filterate is concentrated in a thickener unit. The underflow from thickener is sent back to filter unit while the overflow is led to a cooling cum settling pond. A part of the water from the settling pond is used in the pellet plant. The cake material is mixed with hydrated lime and bentonite and processed for making pellets which can be used either in blast furnace or directly converted into steel using natural gas.

The waste water generated from the overflow of thickener unit amounts to about 900 m<sup>3</sup>/hour. The wastewater of high pH (required for slurry transportation) is corrected prior to its discharge into the sea.

2.6.2 New Mangalore Port Trust

New Mangalore Port has berthing, storage, cargo handling, tug and transportation facilities. The principal export and import commodities handled at New Mangalore port Trust are various types of ores, coffee,

granite, cashew kernels, batteries, P.O.L., fertilizers, cement, scrap, edible oil, wooden logs, coal, phosphoric acid, liquid ammonia, etc.

There are about 3000 workers working in port area in two shifts. The average frequency of cargo vessels is 350 vessels/year and this port does not cater to passenger service.

The main pollutants from port activities are:

- dredged material (from lagoon and channel area)
- oily waste waters (arising out of oil handling operations)
- sanitary wastes (arising out of human activity in port area)

M/s Indian Oil Corporation has a terminal at the Mangalore Port for oil storage and distribution to the tune of 500,000 tonnes/year. They have 5 nos, each of 100 m<sup>3</sup> capacity oil/water separators. The treated effluent from the separators is let out to the sea.

### 2.6.3

#### M/s Mangalore Chemicals and Fertilizers Ltd.

MCF produces 660 TPD & 1030 TPD of ammonia and urea respectively.

The process scheme of the plant includes the following main stages :

- Hydro-desulphurisation process for removal of sulphur from feed naphtha
- ICI process for steam reforming of naphtha
- Benfield process for removal of carbon-di-oxide from the synthesis gas
- ICI process for ammonia synthesis
- CO<sub>2</sub> stripping process for urea synthesis

The wastewater sources are mainly from ammonia plant,

urea plant and cooling tower blow down. The process condensates from ammonia plant are treated in a steam stripper, while the process condensates from urea plant are treated in a desorber and sprayer. Oil bearing effluents from ammonia and urea plants are treated in separate oil separators. Demineralisation plant effluent is neutralised and used in chromium removal treatment system. The combined treated effluent of the order of 350-400 m<sup>3</sup>/hour is envisaged to be pumped into sea. However substantial quantity is presently used in green belt development and maintenance.

#### 2.6.4 Industrial Estate at Baikampady for Small Scale Industries

The small scale industrial estate has been located at Baikampady. There are 239 plots for small scale units, including post office, electricity board office etc. Presently, 127 industrial units are in operation and the distribution of various types of units is indicated in Table 2.3. About 28 industrial units are under construction.

The expected maximum demand of water for the industrial area is around 9.1 MLD (2mgd). The present demand is around 4.54 MLD (1mgd) which is being supplied by KUWS & DB.

There is no drainage system so far for the area, and each industrial units have their own treatment system, comprising of septic tanks and soakage pits.

#### 2.6.5 Mangalore Refineries and Petrochemicals Ltd.

Managlore Refinery with refining capacity of three million metric tonnes per annum of Bombay and Arab Mix crudes in equal ratio is proposed to be 8 km of Mangalore Port in East-North Kalavar in Mangalore taluk in South Kanara district. The product pattern includes

Ethylene, Propylene, Butadiene, LPG, Motor Spirits, Kerosene/ATF, Diesel fuel, Residual fuel oils, Bitumen and Sulphur. Total water requirement of the refinery comprising of process water, boiler feed, cooling water and sanitary purposes has been worked out to be 1670 m<sup>3</sup>/hr which is proposed to be met from Netravati river. There will be total of 17 stacks varying 105 to 135 m height emitting SO<sub>2</sub>, NO<sub>x</sub>, SPM and CO. The project has been accorded environmental clearance by the Ministry of Environment and Forest, Department of Environments, New Delhi.

#### 2.6.6 Domestic Wastewater from City Sewage and Industrial Township

The present water supply to Mangalore city and industries is of the order of 40.5 MLD (8.91 mgd) and the proposed water supply will be of the order of 81.80 MLD (18.0 mgd).

Sewage treatment plants constructed by KUWS & DB of 22.72 MLD (5 mgd) and 4.545 MLD (1 mgd) capacity have been commissioned at Kovalur and Jeppinamogaru respectively covering seven districts of the city while the remaining portion is unsewered. Presently, around 11.36 MLD (2.5 mgd) and 2.27 MLD (0.5 mgd) of sewage is being treated at these plants. These plants comprise of primary settling tank, sludge digester and sludge drying beds (only primary treatment). The influent BOD values were 260 and 184 mg/l while the effluent BOD values were 236 and 134 mg/l respectively. The partially treated domestic wastewaters from Kovalur/Jeppinamaagaru plants ultimately meet the Gurupur/Netravati rivers respectively.

The township of M/s KIOCL has a treatment facility having four septic tanks, each followed by a downflow anaerobic filter unit, catering to population of around 2500 persons. The township of M/s Mangalore Chemicals and Fertilizers Ltd. has about 250 houses

with a population of around 1000 persons, and the sewage is treated, employing septic tanks followed by soak pits.

The Mangalore Port Trust colony located near the port area has around 700 residential quarters. The sewage is being disposed of by means of septic tanks followed by soakage pits. The Port Trust authorities are proposing a comprehensive sewage treatment scheme for their township.

2.7 After detailed evaluation of various factors, the above site was selected for the proposed project and steps for procurement/acquisition of land initiated are being processed by the Karnataka Industrial Areas Development Board. All further discussions, data collection, environmental concerns, impacts, pertain to this site.

TABLE 2.1 : LIST OF STUDY AREA VILLAGES IN 10 KM RADIUS

Sr. No.	Name of the Villages	Census Code Number	Distance (kms) wrt JESCO	Direction wrt JESCO
A. 0 - 5 Km radius				
1.	Bangrakulur	4	4.0	S
2.	Padukody	5	2.3	S
3.	Katipalla	55	4.9	NNW
4.	Bala	56	2.9	N
5.	Kalavar	57	2.9	NNE
6.	Bajpe	58	5.0	NE
7.	Kenjar	59	3.1	ENE
8.	Malavoor	60	4.3	ESE
9.	Padushedde	62	4.8	ESE
10.	Marakada	63	3.9	SE
11.	Kunjathbailu	64	2.6	SE
12.	Panjimogar	65	2.1	S
13.	Panambur	67	2.3	SSW
14.	Baikampady	68	1.3	W
15.	Thokur	69	1.1	NNE
16.	Kulai	70	2.9	WNW
17.	Hosabettu	71	3.9	NW
18.	Kavouoru	XI	4.0	SSE
19.	New Mangalore	NA	2.9	SW
20.	Chitrapura	NA	4.3	WNW
21.	Jogatte	NA	4.3	E
B. 5-10 Km radius				
22.	Bolloor (B)	3	5.7	SSW
23.	Kadri (B)	6	6.4	S & SSE
24.	Mulur	21	9.6	E
25.	Kandavara	22	7.9	E
26.	Adyapady	23	6.6	E
27.	Kolambe	24	7.4	E
28.	Paduperar	25	8.0	ENE
29.	Muduperar	26	8.6	ENE

30.	Kompadavu	27	10.0	NE
31.	Neermarga	41	9.7	SE
32.	Bondanthila	42	9.3	ESE
33.	Kudupu	43	8.1	SE
34.	Panchnadi	44	5.7	SE
35.	Thiruvail	45	8.3	ESE
36.	Chellairu	47	8.6	NNW
37.	Madya	48	6.7	NNW
38.	Surinje	49	7.1	N
39.	Delanthabettu	50	7.7	N
40.	Badagayekkar	51	9.1	NNE
41.	Tenkayekkar	52	7.6	NNE
42.	Permude	53	6.0	NNE
43.	Kuthethur	54	5.4	N
44.	Mudushedde	61	6.6	ESE
45.	Tannirubavi	66	Included in new Mangalore port area	
46.	Nadugodu	83	9.3	NNE
47.	Kolenjur	84	9.0	N
48.	Kemral	85	9.8	N
49.	Attur	86	9.0	N
50.	Panja	87	8.0	N
51.	Koikude	88	9.0	NNW
52.	Haleangady	90	9.7	NNW
53.	Suratkal	XXIV	7.0	NNW
54.	Padavu	XVIII	6.4	SE
55.	Mangalore	XIV	6.4	S
56.	Kanakanadi	IX	9.7	SSE
57.	Derebail	VII	6.0	SSE
58.	Kudremukh	NA	-	-

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TABLE 2.2 : LARGE INDUSTRIES IN 10 KMS STUDY AREA

Sr. No.	Name and location of the unit	End product	Number of Employees
1.	Kudremukh Iron Ore Company Ltd, Panambur, Mangalore	Iron Ore (benefication)	1978
2.	Mangalore Chemicals & Fertilizers, Panambur, Mangalore	Urea & ABC	987
3.	New Mangalore Port	Port activity	-

TABLE 2.3 : MEDIUM INDUSTRIES IN STUDY AREA

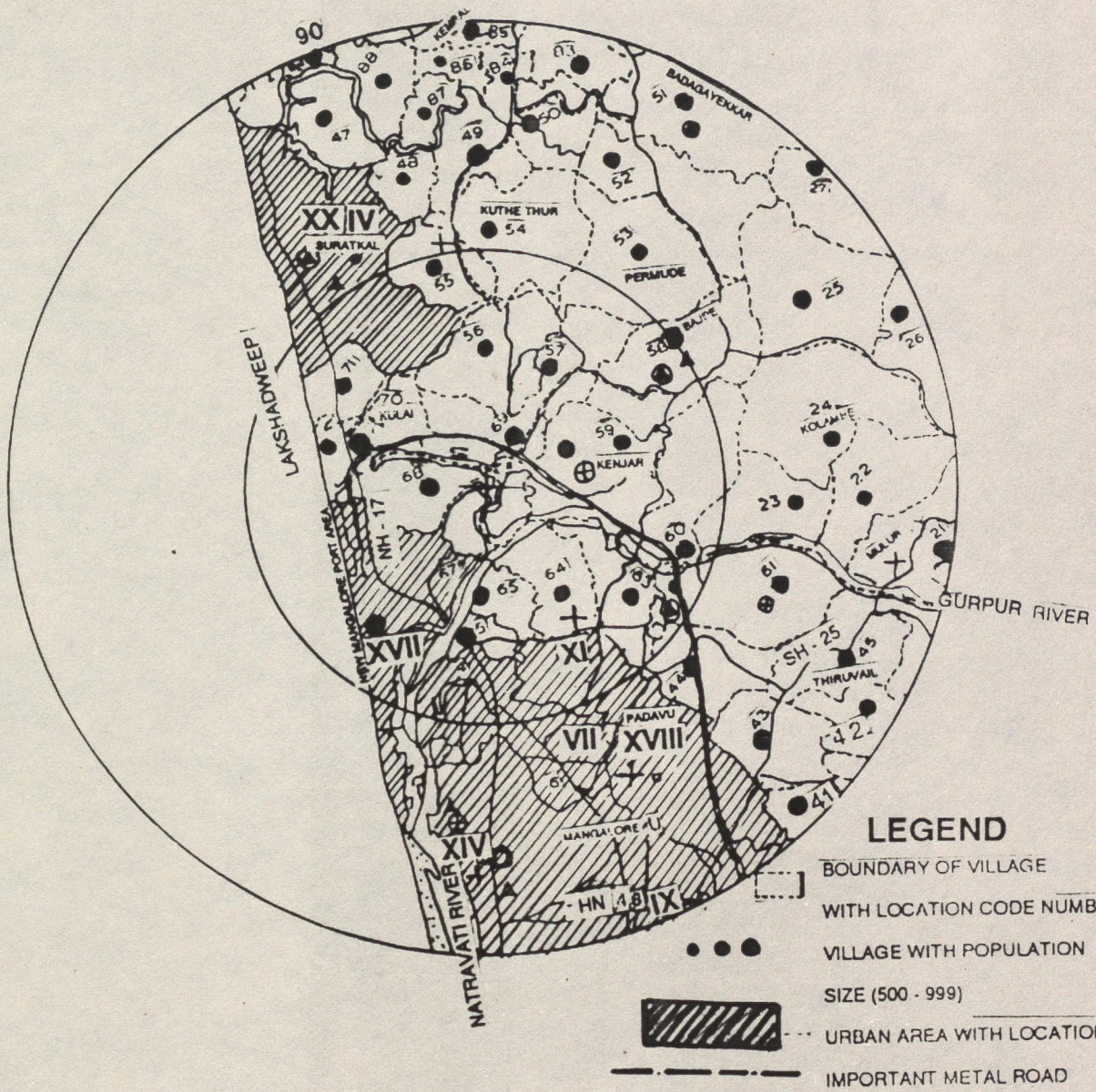
Sr. No.	Name and location of the unit	End product	Number of employees
1.	Canara Steel Limited, Baikampady, Mangalore	M/s. Ingots and Castings	236
2.	Hind Nippon Rural Industries (P) Ltd., Baikampady, Mangalore	Polished Granite slabs	99
3.	Mangalore Trading Association, Car Street, Mangalore	Printing	117
4.	Patil Dyes & Chemicals, Baikampady, Mangalore	Textile Dyes and Chemicals	31
5.	Prakash offset Printers, Baikampady, Mangalore	Offset printing	34
6.	Mazagaon Docks Limited, Panambur, Mangalore	Fabrication Jobs, Civil works Galvanisation of pipes & fittings	-

Source : District Industries Centre, Dakshina Kannada district,  
Action plan 1988-89 to 1993-94. (TRF report Vol. 3)

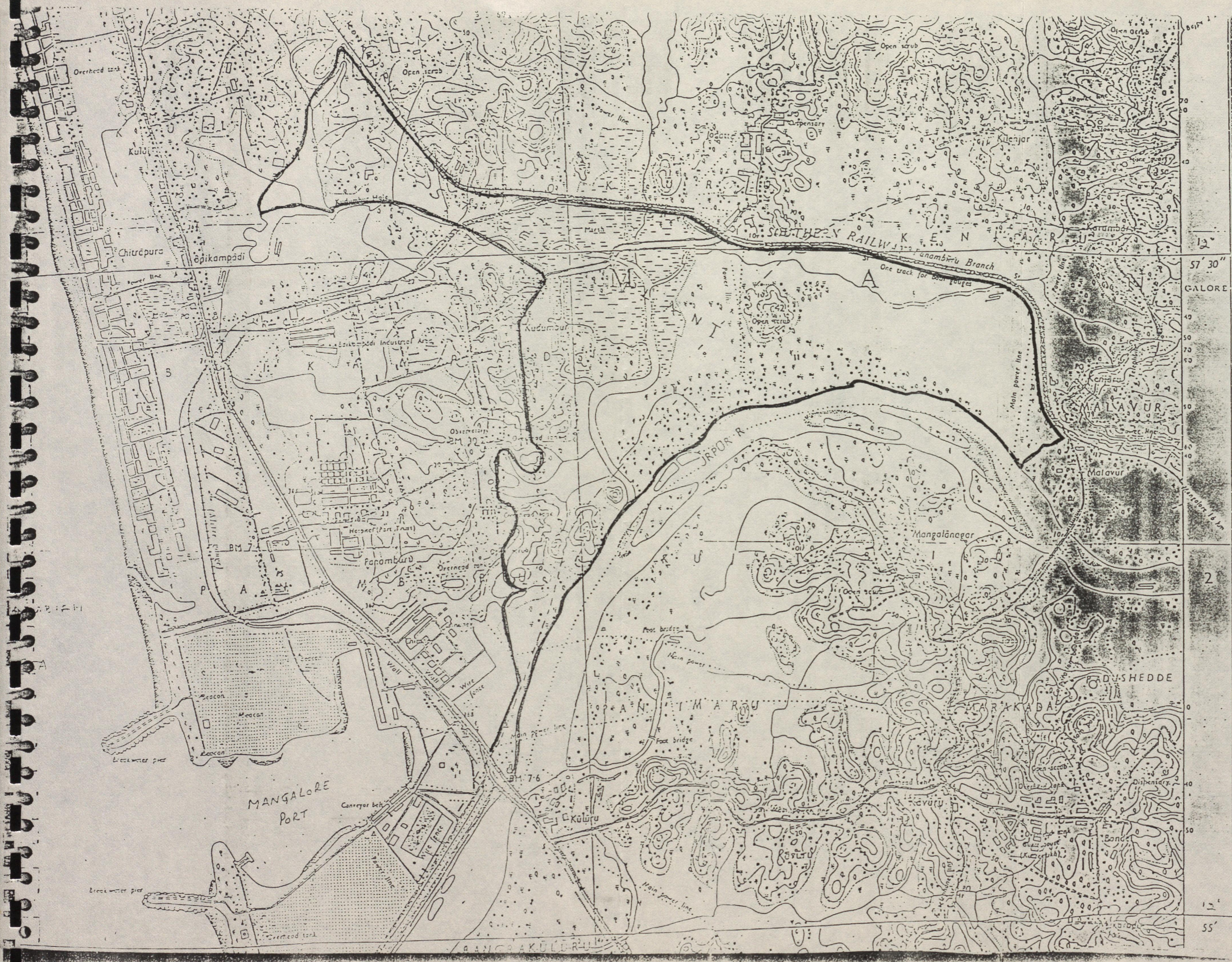
**TABLE 2.4 : DISTRIBUTION OF VARIOUS INDUSTRIAL UNITS  
(IN OPERATION) IN BAIKAMPADY INDUSTRIAL ESTATE**

Sr. No.	Type of industry	No. of Units	Remarks
1.	Metal	39	Engineering, repairs, work shop, fabrication, casting etc.
2.	Food	20	Bakery, soft drinks, cashew processing, vegetable oils etc.
3.	Building materials	16	Stone polishing, wood work, RCC products, tiles etc.
4.	Synthetic materials	9	HDPE pipe and film industry, plastic wares, polythene bags etc.
5.	Packing materials	6	Corrugated boxes, felting works, cartons etc.
6.	Printing	3	Printing and publishing
7.	Chemicals	16	Inorganic, organic, dyes etc.
8.	Services	4	Post office/electricity office etc.
9.	General	14	Oxygen, nitrogen gases, tread rubber, dry ice, insulators, foot wear etc.





JAIPRAKASH ENGG. & STEEL CO.LTD.	
TITLE STUDY AREA SHOWING REVENUE VILLAGES	
EST Consultants (P) Ltd.	
SCALE: 0.7 cm = 1 Km.	FIG. NO. 2.2



THE MANGALORE STEEL PLANT & TPP AREA

FIG. NO 2.3

SCALE 1:2500



LOCATION OF INDUSTRIES IN STUDY AREA

FIG. NO. 2.4