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## LIST OF ABBREVIATIONS, SYMBOLS AND UNITS

| Abbreviation / Symbol / Unit | Full Form |
|---|---|
| @ | At the Rate of |
| $\mu g/m^3$ | Micrograms per Cubic Metre |
| AAQ | Ambient Air Quality |
| AAS | Atomic Absorption Spectrophotometer |
| BDL | Below Detection Limit |
| BF | Blast Furnace |
| BOD | Biochemical Oxygen Demand |
| BOF | Basic Oxygen Furnace |
| BOO | Built Owned and Operate |
| BSL | Bhushan Steel LTD |
| Cal | Calorie |
| CC | Continuous casting |
| CO | Carbon Monoxide |
| CPCB | Central Pollution Control Board |
| CREP | Charter on Corporate Responsibility for Environmental Protection |
| D/s | Downstream |
| dB(A) | Decibels |
| Drg | Drawing |
| EAF | Electric Arc Furnace |
| EC | Electrical Conductivity |
| EIA | Environmental Impact Assessment |
| EMP | Environmental Management Plan |
| EMD | Environmental Management Department |
| ESP | Electro static precipitator |
| Fig | Figure |
| $g/m^2/d$ | Grams per Square metre Per Day |
| $g/m^3$ | Grams per Cubic metre |
| g/s | Grams per Second |
| GCA | Gross Cropped Area |
| GCP | Gas Cleaning plant |
| GIS | Geographical Information System |
| GLC | Ground Level Concentration |
| gm/cc | Grams per Cubic Centimetre |

 

| Abbreviation / Symbol / Unit | Full Form |
|---|---|
| *HVAS* | *High Volume Air Sampler* |
| *IMD* | *India Meteorological Department* |
| *Kcal/Nm3* | *Kilo calorie per normal meter cube* |
| *Kg* | *Kilogram* |
| *Kg/d* | *Kilograms per Day* |
| *Kg/s* | *Kilograms per second* |
| *Kg/h* | *Kilogram per hour* |
| *Kg/t* | *Kilogram per tons* |
| *Kg/thm* | *Kilogram per ton of hot metal* |
| *km* | *Kilometre* |
| *km/hr* | *Kilometres per Hour* |
| *$km^2$* | *Square Kilometre* |
| *l* | *litre* |
| *Leq* | *Log Equivalent* |
| *LF* | *Ladle Furnace* |
| *LPG* | *Liquefied Petroleum gas* |
| *m* | *Metre* |
| *m RL* | *Metres Relative Level* |
| *m/s* | *Metres per Second* |
| *$m^2$* | *Square Metre* |
| *$m^2/s$* | *Square Metres per Second* |
| *$m^3$* | *Cubic Metres* |
| *$m^3/d$* | *Cubic Metres per day* |
| *$m^3/h$* | *Cubic Metres per hour* |
| *mc* | *Machine* |
| *MEC/MECON* | *MECON Ltd* |
| *meq/gm* | *Milli Equivalents per Gram* |
| *mg/l* | *Milligrams Per Litre* |
| *mg/Nm3* | *Milligrams per normal meter cube* |
| *mm* | *Millimetre* |
| *$Mm^3$* | *Million Cubic Metres* |
| *MoEF* | *Ministry of Environment and Forests, Govt. Of India* |
| *MPN* | *Most Probable Number* |
| *MT* | *Million Tons* |
| *MTPA* | *Million Tons per Annum* |
| *MW* | *Mega Watt* |
| *NAAQS* | *National Ambient Air Quality Standards* |
| *Nm3* | *normal meter cube* |

| Abbreviation / Symbol / Unit | Full Form |
|---|---|
| *NOx* | *Oxides of Nitrogen* |
| *NTU* | *Nephelometric Turbidity Units* |
| *OSPCB* | *Orissa State Pollution Control Board* |
| *OSHA* | *Occupational safety and Health Association, USA* |
| *Pb* | *Lead* |
| *RDS* | *Respirable Dust Sampler* |
| *RPM* | *Respirable Particulate Matter* |
| *Rs.* | *Rupees* |
| *SMS* | *Steel Melting Shop* |
| *$SO_2$* | *Sulphur Dioxide* |
| *SP* | *Sinter Plant* |
| *SPM* | *Suspended Particulate Matter* |
| *Sq* | *Square* |
| *t* | *tons* |
| *t/m2/h* | *Tons per meter square per hour* |
| *TCS* | *Tons of crude Steel* |
| *tpd* | *Tons Per Day* |
| *U/s* | *Upstream* |

# 1.0 INTRODUCTION

## 1.1 General

The Indian steel industry has recorded remarkable performance in recent years. The industry is now capable of producing high quality materials to stringent international specification for high-end applications. 21st century is widely perceived to be the century of Asia and India is looked upon as one of the economies with most promising prospects. This possesses a formidable challenge as well as an opportunity to the Indian corporate sector.

The national steel policy has set a target of 60 million tonnes (MT) of steel production by 2010 and to increase it to a level of 100 million tonnes by 2018. The major steel producers in India are planning to expand their capacities in the tune with the national steel policy formulation. BSL intends to increase the capacity of its Steel Plant at Meramandali, Dhenkanal (Orissa) from its present capacity of 1.5 Million Ton per annum (MTPA) to 3.1 MTPA and further expansion of 2.5 MTPA ultimately to 5.6 MTPA of Crude steel products.

The developments of industrial projects play a key role in the economic growth of any country. Industrial process is invariably involving the conversion of raw materials and resources into semi finished and / or finished products. During this process, residues in the form of wastes will be formed. If the residues are not recycled/ re-utilised they become waste and have to be discharged into environment as pollutants. The degree to which the pollutants affect the physical environment depends upon their quantitative and qualitative characteristics as well as the receiving media.

However, any industrial development process is accompanied by some environmental problems. Proper planning at the conceptual stages can minimize

many of these problems. Once an industry is commissioned it becomes difficult and expensive to retrofit pollution control equipment, as such incorporation of the same at conceptual stage is the best alternative

Setting up of an industry has both positive and negative impacts on the environment. The negative impacts include environmental degradation and adverse socio economic changes. It is the responsibility of scientists and environmentalists to document the likely impacts so that they can be identified and attempts are made to minimise the effects due to negative impacts and maximise benefits due to the positive impacts. In this regard and as per Indian Environmental legislation, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) is mandatory and has been considered as one of the most important documents for utilisation by all concerned to understand the environmental implications due to the proposed development activity and take decisions in the best interest of the Environment. Presently EIA & EMP report for 3.1 MTPA is finalized. The report was already presented before Orissa State Pollution Control Board for Consent for Establishment (CFE). Public consultation was also conducted at site for the same as per Indian law. EIA & EMP report for 5.6 MTPA is under preparation and will take some more time to complete all formalities of scoping as per Indian norms. .

## 1.2 Purpose of the Report

In pursuance of Government of India Policy, under 'The Environment (Protection) Act 1986' and Orissa State Pollution Control Board (OSPCB), the proposed expansion will require clearance from environmental angle. BSL entrusted

MECON LIMITED (MECON) to prepare an Environmental Impact Assessment and Environmental Management Plan (EIA/EMP) report for their proposed expansion plant at Meramandali, Dhenkanal in Orissa.

The present report is an Environmental Assessment (EA) report of 2.5 MTPA plant prepared to ensure environmental soundness of the project and top management commitment towards environmental protection. However, as mentioned earlier, the EIA/EMP for the project is under preparation as it is mandatory and will be put up to MoE&F, Government of India, for according environmental clearance in due course of time. The purpose of this study report is to take stock of the prevailing quality of environment, and to plan appropriate environmental control measures to minimise adverse impacts and to maximise beneficial impacts. The following major objectives have been considered:

- Assess the existing status of environment.
- Assess the impacts due to the expansion of project.
- Suggest pollution control and ameliorative measures.
- Prepare an action plan for implementation of suggested ameliorative measures.
- Suggest a monitoring programme to assess the efficacy of the various adopted environmental control measures.
- Assess financial considerations for environmental control plans.

For carrying out the Environmental Impact Assessment (EIA) study, the area falling within 10 km radius of project site at Meramandali area has been considered for generation of base line data with respect to present air quality, water quality, noise level, soil quality, ecology, and meteorology etc. The site studies were carried-out during summer season in April, 2006 to June 2006.

An in-depth analysis of the baseline environmental data generated by actual field monitoring and collected from various secondary sources has been carried out for identifying and predicting the probable environmental impacts due to the expansion of project. Reasonable assumptions have been made, wherever data is found lacking. Based on the findings a suitable environmental management plan has been suggested.

## 1.3 Project & Project Proponent

Bhushan Steel Limited (BSL) as the leading steel maker is in position to fulfill its role in the nation's quest for higher growth and development in the new millennium. BSL is the dominant player in steel producer in the country having its plants at Shahibabad (UP) and Khapoli in Maharastra state.

## 1.4 Nature, Size, Location of the Project

The nature of project is ferrous metallurgical operation and falls under the category of primary metallurgical industry including sponge iron manufacturing and further processing to secondary metallurgical industry for HR coil product in flat category.

The size of the project is 5.6 MTPA and will be developed in two stages. Stage I up to 3.1 MTPA and Stage II up to 2.5 MTPA, thus the total plant capacity will be 5.6 MTPA.

The site is located between latitude 20°46'41" to 20°49'20" N and longitudes 85°15'22" to 85°16'21" E at Meramandali block of Dhenkanal district of Orissa. Land measuring about 1664 acres (which was falling under villages Sibpur, Narendrapur, Itapo, and Asanabani in district Dhenkanal in Orissa) had been

under possession of BSL. All expansion will be located inside the existing plant boundary.

## 1.5 Project Importance to the Country/Region

The project will continue to contribute to state as well as to national exchequer by way of taxes in the form of excise duty, custom duty as most of the products are going to be exported. This will help the local economy directly as well as indirectly. Therefore project is having great importance to national economy.

In the state the project will generate jobs in the form of direct as well as indirect employment for local people and local economy will flourish due to income expenditure in the local market.

## 1.6 Screening Method

As per New EIA notification published by MOE & F, Government of India, dated 14th September 2006, this project falls under Category "A" of the list of the Project or activities requiring prior environmental Clearance of MOE & F.

An application seeking prior environmental clearance shall be made in prescribed Form 1 along with proposed Terms of Reference (TOR) by the project Proponent. Presentation shall be made before the Expert Appraisal Committee (EAC) of MOE & F for determining Terms of Reference (TOR) of the EIA study.

## 1.7 Scoping

As per New EIA notification published by MOE & F, Government of India dated 14th September 2006, "Scoping": refers to the process by which the Expert Appraisal Committee in the case of Category 'A' projects or activities, including applications for expansion and/or modernization and/or change in product mix of existing projects or activities, determine detailed and comprehensive Terms Of

Reference (TOR) addressing all relevant environmental concerns for the preparation of an Environment Impact Assessment (EIA) Report in respect of the project or activity for which prior environmental clearance is sought. The Expert Appraisal Committee concerned shall determine the Terms of Reference on the basis of the information furnished in the prescribed application Form1 including Terns of Reference proposed by the applicant,

## 1.8 Scope of the present Study

This report contain various information on the existing environmental attributes, including air, water, noise, solid waste, soil quality, ecology and socio-economic patterns etc. This report evaluates the pollution potential of various process as envisaged in the proposed plant (2.5 MTPA) activities on the environment.

It also covers the various remedial measures considered by plant management like air pollution control systems, complete recycling of process cooling water, green belt development plans and reuse of solid waste and other environmental management system which are useful for control of environmental degradation due to the proposed steel plant.

Detailed impact study can be completed after generation of fresh base line data after finalization of TOR as per directive of MOE & F which is yet to be completed. However, site specific environmental data as available is being used herewith.

This Environmental Assessment Report has been generated broadly on the general structure of EIA given in Appendix III and IIIA in the EIA Notification, 2006. The present report is structured as follows:

- Introduction
- Project Description
- Description of the Environment
- Anticipated Environmental Impacts
- Mitigation measures
- Environmental Monitoring Programme
- Disaster Management plan
- Socio Economic Impact Assessment
- Project benefits
- Organisation and Manpower
- Consultant credentials