

EXECUTIVE SUMMARY OF THE EIA REPORT

for Integrated Steel Plant
At Sithoornatham Villages, Gummidipoondi Taluk,
Thiruvalluvar District

Prepared for
TULSYAN NEC LIMITED
Chennai



EXECUTIVE SUMMARY

1. INTRODUCTION

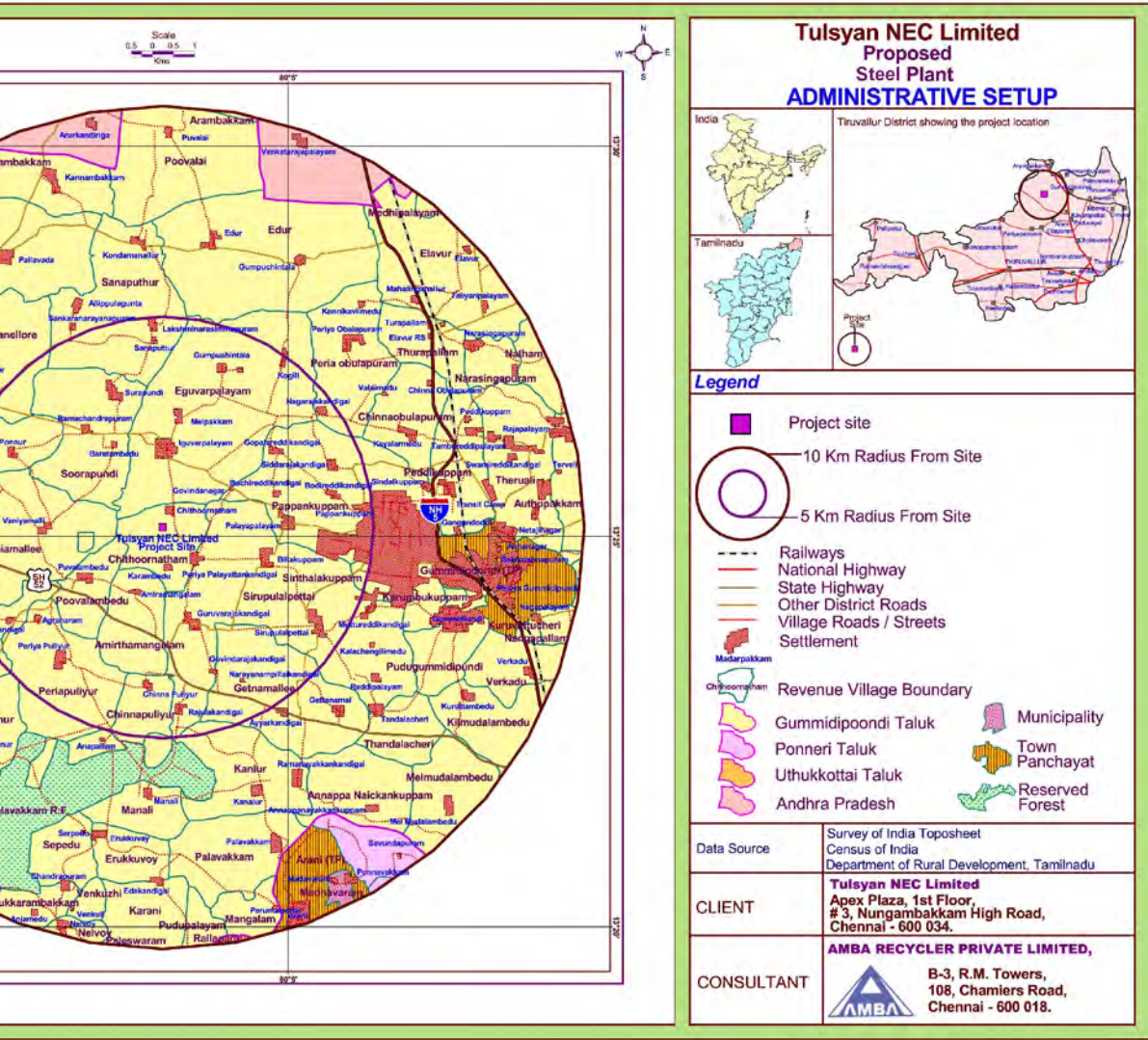
The TULSYAN NEC LIMITED (TNL) is one of the pioneers in the fields of re-rolling having one of India's largest re-rolling mill in Tamil Nadu. TNECL manufactures various iron and steel products, mainly catering to the fields of building construction.

2. LOCATION AND DESCRIPTION OF SITE ENVIRONMENT

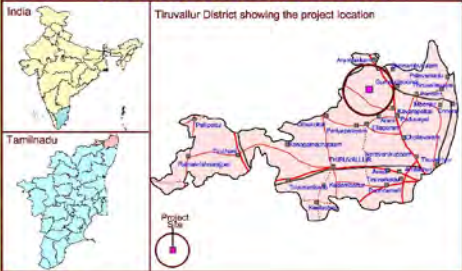
The proposed Integrated Steel Plant will be located at S. Nos. **6, 7, 8, 27, 28, 29, 30, 26, and 9** adjacent to the proposed 2 x 35 MW Captive Power Plant Project Site at Village # 17, Sithoornattam Village, Gummidipoondi Taluk, Tiruvallur District. The location of which is shown in **Fig.1.0**.

3. NEED FOR THE PROJECT

The steel industry in India is rapidly expanding. It is forecast that steel production will rise from 38 million tonnes in 2005 to 68 million tones in 2015. Extensive capacity increases are planned for this same period. Despite the stellar increase in production, India's share of global crude steel output is forecast to rise to just under 4% in the next ten years. The Indian steel ministry plans to raise the export share from 15% at present to 24% in the next 15 years. In view of the increased demand domestically, and in the export market M/s.Tulsyan NEC Ltd, (TNECL), has proposed to install a new plant for production of M.S. rolled products.



**Tulsyan NEC Limited
Proposed
Steel Plant
ADMINISTRATIVE SETUP**



- Legend**
- Project site
 - 10 Km Radius From Site
 - 5 Km Radius From Site
 - Railways
 - National Highway
 - State Highway
 - Other District Roads
 - Village Roads / Streets
 - Settlement
 - Madarakkam
 - Chittooratham
 - Revenue Village Boundary
 - Gummidipoondi Taluk
 - Ponneri Taluk
 - Uthukkottai Taluk
 - Andhra Pradesh
 - Municipality
 - Town Panchayat
 - Reserved Forest

Data Source: Survey of India Toposheet
Census of India
Department of Rural Development, Tamilnadu

CLIENT: **Tulsyan NEC Limited**
Apex Plaza, 1st Floor,
3, Nungambakkam High Road,
Chennai - 600 034.

CONSULTANT: **AMBA RECYCLER PRIVATE LIMITED,**
 B-3, R.M. Towers,
108, Chalmers Road,
Chennai - 600 018.

4. PROJECT DESCRIPTION

4.1 Integrated Steel Plant

Description	Phase I (TPA)	Phase II (includes Phase I capacity) [TPA]
M.S. Billets	80,000	80,000
Blooms	Nil	1,59,600
Structural Sections	-	1,50,000

The Integrated Steel plant planned with Raw Materials

Raw Material	Specific Consumption per ton of respective products	Gross Quantity (Tons/Yr)	
		Phase 1	Phase 2
Sponge Iron		25,000	75,000
Non coking coal for Coal gas plant in Rolling mill	0.09	-	14,400
Steel Scrap / Pig Iron for steel making		60,000	3,40,000
Ferro-alloys for steel making	0.013	1,125	3,370
Pet Coke for steel making	0.018	1,500	4,500
Fuel oil for rolling mill furnace		550	3,200

The Integrated Steel plant comprising of following units:

- Induction Furnace
- Ladle Furnace
- Roll Mills
- Bloom Caster
- Structural Mill
- D.G. Sets
- Fuel system
- Bag Filters
- Chimney
- Utilities and service

4.2 Salient Features of the Proposed Project

S.No	Item	Description
1	Land	35 Acres
2	Water Requirement	Phase I - 34 cu. m/day Phase II – 87 cu. m/day
3	Source	Borewell / Ground Water
4	Environmental Aspects	<ul style="list-style-type: none"> ○ Adequate natural ventilation by proper design of the building and provision of local fume extraction systems in furnace operating zones with suction hoods, duct work, fans, bag filters etc. ○ Chimney of adequate height for Reheating Furnace. ○ Use of Producer Gas in Reheating Furnace. ○ Proper maintenance and tarring of roads inside the factory. ○ Preventive maintenance of valves and other equipments. ○ Green Belt development. ○ Effective operation and maintenance of pollution control system is proposed to contain the emissions/keep them within the CPCB limits. ○ Good house keeping ○ Dust Control System to minimize the fugitive dust emission ○ Fire Protection system ○ Dust suppression system

4.3 Utilities and Services

4.3.1 Water supply

The plant has been provided with extensive re-circulation systems to minimize make-up water consumption as far as possible. The water requirement in the entire plant operation is only for cooling purposes. The daily water requirement is only to makeup the evaporation / blow down loss.

Raw Water Consumption,	Phase I (cu.m/d)	Phase II (cu.m/d)
Induction coil cooling	13	30
Billet casting cooling	7	7
TMT cooling	--	20
Domestic usage	14	30
TOTAL	34	87

4.3.2 Wastewater/ waste management

There is no process effluent except the **cooling tower blow down**, which is collected in guard pond and from here will be used for green belt development within the plant premises.

Apart from this is, the domestic sewage will be treated in a STP to the limits as specified by TNPCB/CPCB, and then dispersed on land within plant premises for greenbelt development.

4.4 Project Cost & Implementation Schedule

The cost of the total project is Rs.300 crores, which includes Rs.30 crores for environmental protection measures. The project is scheduled to be commissioned in December 2011.

5. Baseline Environment

5.1 Study Area and Period

An area of 10 km radius around the project site was considered for the study. The baseline environmental data was generated during December 2009- February 2010.

5.2 Description of the Environment

The environmental setting of project site is given below.

Sl.No.	Particulars	Details
1	Latitude	13°24'49.664" N – 13°25'14.213" N
2	Longitude	80°3'15.036" E – 80°3'37.823" E
3	Elevation above MSL	15 M

4	Climatic conditions	Semi Arid
5	Present land use at the site	Dry Vacant Land
6	Nearest Highway	National Highway- NH-5 (7 km in the east)
7	Nearest Railway Station	8 km Gummidipoondi (East/SE)
8	Nearest Airport	45 Km Chennai Airport (South West)
9	Nearest town/city	8 km Gummidipoondi (East/SE), Chennai – 40 km
10	Nearest Sea	20 kms- Bay of Bangal
11	Hills/Valleys	None within 10kms
12	Topography	Plain
13	Archaeologically important places	None within 10 kms
14	National Parks/ wildlife sanctuaries	None within 10 kms
15	Reserved/protected Forest	5.2 km – Palavakkam R.F
16	Seismicity	Zone III
17	Water Source	Ground Water
18	Streams/Rivers	7.5 km –Araniyar River
19	Defence Installations	None within 10 kms

5.3 Baseline Environmental Conditions

Baseline environmental studies for various environmental attributes were carried out during the months December 2009 to February 2010, covering winter season.

5.3.1 Ambient air quality

Ambient Air Quality Monitoring (AAQM) stations were set up at eight locations. The samples were collected twice in a week for one complete season, respirable suspended particulate matter (RSPM), oxides of Sulphur (SO₂), oxides of Nitrogen (NO_x) were collected on a 24-hourly basis and CO, HC on an 8-hourly basis. The baseline air quality is as shown below:

Location	Concentration µg/Nm ³		
	SO ₂	NO _x	RSPM
Proposed site	6-15	8-16	12-20
PappanKuppam	7-19	7-18	15-23
Chitoornatham	8-20	9-17	16-26
Puvalmbedu	8-15	7-16	18-26
Billakuppam	8-17	9-19	14-26
Vaniamallee	6-17	7-16	14-21
Iguvarpalayam	7-15	7-15	16-22
Guruvarajakandigai	8-14	9-16	18-25
Overall	6-20	7-19	12-26

CO < 114.5µg/Nm³; HC < 65µg/Nm³

5.3.2. Ambient noise levels

Noise levels were monitored at eight (8) locations for assessing the existing noise levels in and around the project site. The monitoring was carried out once in the season for 24 hours and found to be within the permissible levels.

5.3.3 Water Quality

The baseline data on water in and around the proposed site was generated during the study period. In all 8 water samples were collected in different villages around the site, out of this 7 samples are from ground water sources and 1 sample from surface water. The water samples were analyzed as per Standard Methods for analysis of water and wastewater, American Public health Association (APHA) Publication. The Ph was varying for ground waters from 7.2 – 7.8 and in surface water the pH is observed 7.1. The chloride levels in the ground water samples collected in the study areas were ranging from 95 mg/l to a maximum of 170 mg/l, where as in surface waters levels it was 35 mg/l. In ground water samples collected from the study area, the hardness is varying from 173 mg/l to 307 mg/l. In the ground water samples of study area the fluoride value were in the range of 0.12 to 0.51 mg/l where as in the surface water the fluoride was 0.23 mg/l.

5.3.4 Soil Quality

A total of 5-samples was collected in and around the plant site. To assess the baseline soil quality characteristics in the neighbourhood, samples were collected using augers at depths upto 30, 60 and 100cms. At all locations, pH ranges from 6.5 to 6.9. The TNECL and clay content varied between 3 & 5 %. Nitrogen, Potassium and Phosphorus are found to be in the range of 0.002 – 0.006 %, 0.002 - 0.004 % and 0.001 – 0.004 % respectively. Organic Carbon is in the range of 0.98 – 1.2 %.

The soil at the plant site is deep, moderately well drained calcareous loamy soil with predominantly sandy texture. The NPK content was very low indicating requirement of good quality water for irrigation.

5.3.5 Flora and Fauna

The vegetation is mostly xerophytic type, dominated by *Acacia planiferns* and *A. nilotica*. Though the plant density and diversity is poor, the sporadic occurrence of the species viz., *Azadirachta indica*, *Albazzia lebbek*, *Terminatia catapa*, etc were recorded.

A total number of 17 species of birds were noticed during the present survey. Most common birds observed at various sites were black drongo, common myna, house crow, house sparrow, jungle crow and redvented bulbul. These birds were observed in close association with man and cattles. The majority of birds encountered in the study area are omnivorous in habit preferring insects, worms etc. as the main food item.

5.3.6 Baseline socio-economic conditions

The total population of Gummidipoondi Taluk in Census 2001 was 143,402, out of which 71,919 (or 50.15 per cent) are males and 71,423 (or 49.80 per cent) are females. Among the total population, 38,408 (26.78 per cent) belonged to the Scheduled Castes (SC) and 3,434 (2.39 per cent) belonged to the Schedule Tribes (ST). The literacy level is 54% the working population is 65% engaged as main Workers and 2% as marginal workers. The area does have moderates to good facilities for Primary and secondary education. There are also primary health centres available.

5.4 Anticipated Environmental Impact and Management Plan

5.4.1 Construction Phase

During construction, activities like soil cutting/filling, grading, concreting, piling and installation of main plant equipment like furnaces, transformers, roll & structural mills, bloom caster etc., will be performed. Temporarily, some of the environmental parameters may get disturbed during the construction phase.

Dust pollution will be minimized by water spraying and maintenance of road. The construction heavy vehicles will be maintained properly to ensure emission within permissible levels and also reducing the noise levels. Adopting good construction and engineering practices will help in mitigating the water pollution. Temporary arrangements will be made for septic tank/pit to get rid of sanitary problem at construction site.

However, these impacts are expected to be temporary in nature that will subside once construction period is over.

Temporary beneficial socio-economic impact in terms of increased jobs and flow of money to the workers and villagers settled nearby is expected during the construction period. Migration of workers population is expected to be minimum, as local workers from the nearby area will be preferred for temporary employment.

5.4.2 Operation Phase

5.4.2.1 Air Environment

The major sources of air pollution from the proposed operation are:

- Electric Induction Furnace
- Reheating Furnace
- D.G. Sets

The proposed integrated steel plant will have emission in the form of SO₂, NO_x, and SPM from flue gases of the stacks. The emission from the stack is considered to be constantly distributed throughout the day for the dispersion analysis.

The emission rate and stack details considered for air pollution dispersion analysis is given below.

1	2	3	4	5	6	7	8
MS	MS	MS	MS	MS	M.S	M.S	M.S
Electric induction Furnace - I	Electric induction Furnace - II	Electric induction Furnace - III	Electric induction Furnace - IV	Electric induction Furnace - V	Reheating Furnace	D.G. Set 500 KVA	D.G. Set 750 KVA
30.0	30.0	30.0	30.0	30.0	15	9.5	10.5
Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
600	600	600	600	600	500	150	200
20000	20000	20000	20000	20000	8500	2500	3400
90	90	90	90	90	150	150	300
20	20	20	20	20	29	25.0	30.0
---	---	---	---	---	---	180	280
---	---	---	---	---	---	11	22
100	100	100	100	100	----	---	---
---	---	---	---	---	---	0.2644	0.36
---	---	---	---	---	---	0.0208	0.031
0.045	0.045	0.045	0.045	0.045	----	---	---

The sources & process of pollution, the pollutants and their respective control measures existing and proposed are as follows:

Sl.No	Location/Shop	Facilities
1	Raw Material Storage area	Dust suppression system with water spray
2	SMS – Induction Furnace area	Adequate natural ventilation by proper design of the building and provision of local fume extraction systems in furnace operating zones with suction hoods, duct work, fans, Scrubber etc.
3.	Reheating Furnace	Chimney of adequate height for Reheating Furnace. Use of Producer Gas in Reheating Furnace. Adequate natural ventilation by proper design of the building.

The following environmental protection or pollution control systems have been proposed to be installed for mitigation of impacts on Air Environment.

- Proper maintenance and tarring of roads inside the factory.
- Preventive maintenance of valves and other equipments.
- Implementation of recommendations on Green belt on all sides within the project boundary, and community plantation around the unit with help of local area development authorities will help in attenuating the fugitive emissions of pollutants from the unit. Green belt zones will also be created within the plant premises.
- Ambient air quality and stack/fugitive emissions proposed to be monitored regularly.
- Inplant training will be provided to the plant personnel on operation and maintenance of dust collectors, techniques of dust emission measurements, particle size analysis etc.
- Effective operation and maintenance of pollution control system is proposed to contain the emissions/keep them within the CPCB limits
- A good house keeping consisting of simple, obvious task of cleaning up spills, removing accumulations around processing equipment and in general keeping things neat and clean will form a part of normal operation and maintenance procedure.

Air Dispersion Modeling

The incremental increase in ground level concentration using **ISCST3 predicated** that the concentration of SPM remain well within the permissible levels upon the operation of the Steel Plant.

The ambient air quality monitoring and prediction of **GLC** for different averaging times depict that 24 hrs/avg, **SPM** remain within the permissible limits of CPCB. As effective Air Pollution Control measures will be ensured for the proposed plant of **TNECL**, there will not be any significant impact on the Air Quality.

Suggested control measures for arresting fugitive dust emissions along with the envisaged pollution control equipment are adequate and will help to have a healthy and cleaner environment inside the plant thereby improve the productivity and the efficiency of the workers as well as that of plant machinery.

5.4.2.2 Water Environment

There is no process effluent except the **cooling tower blow down**, which is collected in guard pond and from here will be used for green belt development within the plant premises.

The quantity of cooling tower blow down and sewage generation are as follows:

Description of effluent generated	Phase I (cu.m/d)	Phase II (cu.m/d)
Industrial (Cooling water blow down)	12.0	23.0
Sewage	11.2	24.0
Total	23.2	47.0

Apart from this is, the domestic sewage will be treated in a STP to the limits as specified by TNPCB/CPCB, and then dispersed on land within plant premises for greenbelt development.

5.4.2.3 Noise Environment

During operations, the major sources of noise generation would be rolling mill and handling of raw materials viz, scarp / billets and handling of finished products etc. The noise level at a distance of 1.5 meter from the source will be maintained at less than the exposure levels of OSHA.

Following measures have been recommended to control the noise level below OSHA levels

- The work places like D.G sets etc., will be provided with noise dampening materials like thin rubber/lead sheet and surrounded with double walled protection.
- The roofs, walls and floors will be covered with noise absorbing material to reduce the reflected noise.
- Control rooms will be in closed glass enclosures.
- Ear Muffs will be provided to the workers, and it will be ensured that these are used by the workers.
- A thick green belt with species of rich canopy will be developed to control the noise levels at the boundary.
- The specific species of Green Belt that will be used for control of noise emissions.
- Monitoring of noise levels.

In addition to the above mentioned noise control measures, **thick green belt absorbs more than 50%** of the noise generated at TNECL, and hence abate any impact on the community.

5.4.2.4 Solid Waste Management

The solid waste generated will be basically from melting operation. The melting operation generates slag, which is inert, ground in slag grinders and given to Cement producers.

The quantity of solid waste that would be generated upon operation is as follows

S. No.	Description	Quantity generated (T/M)		Mode of Disposal
		Phase I	Phase II	
1.	Slag	132	364	An exclusive slag grinder proposed and will be given to cement manufacturer.

5.4.2.5 Land Environment

One of the activities with large potential effects on soil and groundwater is the disposal of waste on land and in landfill sites. When waste material is disposed off on land, rainwater and surface run-off may percolate through the material and carry contaminants into soil and groundwater. Change in soil surface and soil properties may have impacts on soil micro-organisms, natural and cultivated plants and animals, the visual landscape and amenity and on buildings and other constructions.

The ground level concentrations of the pollutants are predicted to increase by negligible level. Hence, the impact on land environment due to the proposed project is marginal, and insignificant.

5.4.2.6 Green Belt Development

TNECL has proposed to develop a green belt of **10 Acres**. Natural features of the plant site will be retained as far as possible to integrate with the buildings to form a harmonious/pleasant environment. The green belt will consist of native perennial green and fast growing trees.

5.4.2.7 Biological Environment

Presently the site is devoid of any extensive agricultural activities and biotic resources. Hence introduction of proposed steel plant shall not have any impact on the existing ecosystem.

RSPM, NO_x and SO₂ due to operation of the proposed steel plant will remain within the National Ambient Air Quality standards. Therefore, the impact of these emissions on the surrounding ecosystem will be insignificant.

5.4.2.8 Socio-economic Environment

Approximately **250 persons** will be employed **directly** and many will be indirectly employed in the plant, when the steel plant goes into operation. Indirect benefits will also accrue to a large extent around the project site. Support services in **commerce, transport and ancillary workshops** would further **enhance employment potential**.

The project proponent not only believe in the development of project area and their employees but also in the socio-economic growth of its neighborhood by taking up several welfare activities which would help improving the environment with significant growth in the socio-economic status.

6.0 Environmental Monitoring Programme

Sl.No.	Parameter	Frequency
1	Ambient air quality	Twice in a week will be carried out for 24 hours continuously to monitor SPM, RSPM, SO ₂ , NO _x , CO, HC levels.
2	Source emissions	Stack monitoring will be carried out for SPM, SO ₂ , and NO _x regularly.
3	Ground water quality	Once in a month except for heavy metals which will be monitored quarterly. Monitoring will be carried out for parameters specified under IS:10500, 1991.
4	Wastewater quality	Once in a month will be carried out for 24 hours continuously as per EPA Rules, 1986.
5	Soil sample	Soil samples will be monitored quarterly for parameters specified by TNPCB.
6	Solid waste	Monthly records of slag generation, collection, storage and disposal will be maintained.
7	Ambient Noise Environment	Ambient noise environment will be monitored once in a season.
8	Work Atmosphere Noise	Noise level monitoring will be carried out within the steel plant premises once in a month.
9	Occupational Health and safety	Qualified doctors will carry out pre-employment and periodical medical check-up of all the employees.

7.0 Risk Analysis

Risk assessment study of the proposed steel plant was carried out. All equipment vulnerable to explosion or fire are designed to relevant IS codes & statutory regulations. Suitable fire protection system comprising hydrants and spray systems are provided for fire protection.

Comprehensive on-site/off site emergency plan and disaster management plan for the proposed unit is prepared based on Risk Assessment Study.

8.0 Conclusion

The proposed integrated steel plant of TNECL being located as per norms of the siting guidelines of MoEF and adoption of extensive pollution control techniques to maintain the emission/discharges within the permissible norms will have least impact on the ambient environment.

- There are no resettlements.
- Terrestrial eco-system will not be affected.
- Almost no impact on air, water, soil and noise environment of the surrounding study area.
- The proposed project will generate direct and indirect employment during construction and operation phase.
- Separate organization set-up will be formulated to take care of all the pollution control steps.
- To prevent the occurrence of any disaster, comprehensive on-site/off site emergency plan and disaster management plan for the proposed unit will be prepared based on Risk Assessment Study.