

EXECUTIVE SUMMARY

1.1 Project Description

The proposed Industrial Park is to be developed over a 1386.72 Acre of land with facilities encompassing common infrastructure facilities such as Roads, Power, Water, Drainage, Street lightning and Social infrastructure facilities such as college etc.

The proposed site is aligned along NH – 207 and it is about 13 Kms away from Bengaluru. Latitude and Longitude of the proposed industrial development area are 13° 13' N and 77° 16'E.

The proposed site is bounded by Nidavanda tank in the North, Permanahalli tank in the East, Saibabapalya village in the South and Lakshmanpura village in the East. Tumkur – Doddaballapura Road intersects the site from East to West.

Some part of the proposed project area identified for industrial area development comes under “**Tipagondanahalli Reservoir Catchment Area**”.

Land use analysis of Sompura Industrial Area is as shown in the table below.

Table 1: Land use Analysis

S. No	Description	Area in Acre	Percentage (%)
1	Industrial Area	846.01	62.47
2	Civic Amenity	34.64	2.56
3	Public Utility	29.08	2.15
4	Commercial	2.37	0.17
5	Parks & Open Spaces	150.37	11.10
6	Parking	69.86	5.16
7	Roads	221.99	16.39
Total		1354.32	100.00
Reserve SC/ST Entrepreneurs		32.40	2.39

Table: Zone wise Land use Analysis

S. No	Description	Area in Acre	Percentage (%)
1	I.T/B.T Precision & Electronic Industries	116.33	13.72
2	Garments & Food processing	361.17	42.58
3	Chemicals, Rubber, Plastic, Foundry & others	165.80	19.56
4	General Industries	204.74	24.14
Total		848.01	100

Allotment for Red, Orange and Green Category of industries will be given in the proposed industrial area at Sompura.

The Industrial Area comprises of:

1. Common Infrastructure Facilities such as Roads, Storm Water Drains, Rain Water Harvesting Ponds and Water Supply Network
2. Basic infrastructure facilities such as CETP & STP

The water source for the industrial area is ground water. Water requirement for the industrial area is as follows

Table 1.2: Water Requirement

S. No	Area of Utilization	Quantity of Usage (MLD)
1	Industries	3.50
	a) Process	1.00
	b) Utilities	0.70
	c) Domestic	1.00
	d) Green belt	0.80
2	Total wastewater generated	2.16
	a) Process	0.80
	b) Utilities	0.56
	c) Domestic	0.80

1.1.1 Basic Infrastructure Facilities

A. CETP & STP

CETP design requires basic data such as effluent characteristics and quantity. Effluent characteristics and quantity can be assessed only after the occupancy of 60-70% of the allotted plots. Hence at present it is not possible to provide the design details of CETP and common conveyance system and will be provided during the implementation stage.

At present individual industries will treat their effluents through septic tanks within the plots allotted them. After the commissioning of CETP, the effluents will be sent to CETP for pre and post treatment.

B. Hazardous and Solid Waste Management

All industries present in the Industrial Development Area (IDA) will utilize the services of the Common Hazardous Waste Management Facility (CHWMF) proposed in the city as per the regulations of MOEF, GOI. All the solid wastes and hazardous waste generated will be transported to this facility for treatment and for safe disposal. Storage and transportation of the solid and hazardous waste are the responsibility of the individual industries.

1.1.2 Need for the Project

In order to improve the socio – economic status of the country “Development of Industries is a Must”

Due the proposed industrial area development at Sompura

1. There will positive impacts on the socio – economic status of the surrounding areas
2. More employment opportunities will be generated
3. Physical infrastructure development such as improvement to roads, UGD lines, street lights, water supply network etc will take place

Also a Project like Sompura Industrial Development Area (IDA), at this juncture will be welcomed by all the parties concerned, viz. IT/BT Precision & Electronic Industries, Garments and Food Processing/Chemicals, Rubber, Plastic, Foundry & Others/General Industries. Keeping the Environmental Management as the focal issue right from the Industrial Development Area (IDA) Layout stage will definitely herald a new era in the

sustainable industrial growth in harmony with the environment. Sompura Industrial Development Area (IDA) has a potential to prove that the Industrial development and environment protection can go hand in hand in contrast to the general feeling that the industrialization leads to pollution.

1.2 Description of the Environment

The baseline data was collected for various environmental components viz. Air, Noise, Water, Land and Socio-economics so as to compute the impacts that are likely to be arising out of the industrial activities covering an area of 10 km radially from the proposed project area located in Sompura. The project area was selected as the nodal center for baseline data collection.

EIA study is based on the monitoring data of Air, Water, Noise and Soil collected for the three Seasons i.e. **from December 2009 to February 2010**. Socio-economic data were collected through primary and secondary sources.

1.2.1 Climatological Condition

The climatological condition of the study area is as follows.

- The climate in the study region is generally hot and humid.
- The temperature in the study region varies from 15^o to 34^o C.
- The district annual normal rainfall is 1202mm of which South-West monsoon account for 59.3% of the normal while North-East monsoon contributes 24.7% of the normal rainfall.

1.2.2 Meteorological Scenario

On analysis of the data recorded from December 2009 to January 2010 reveals that the most predominant wind direction is E (38.71 % of the total time) which is followed by SE, NE, N and NNE with a percentage frequency recording of , 13.44, 11.83, 5.38, 5.24. Wind was also recorded from other all directions which were comparatively. Calm conditions prevailed for 9.68 % of the total time.

Observation of the data recorded for the month of February 2010 reveals that the most predominant wind direction was E (45.98 % of the total time) which is followed by N,NE,ENE and SE with a percentage frequency recording are 18.45%, 13.39%, 3.57%, 2.83% respectively. Calm conditions prevailed for 9.82 % of the total time.

The minimum and maximum level of SPM recorded within the study area was in the range of 74.4 to 153.4 $\mu\text{g}/\text{m}^3$ with the 98th percentile ranging between 117 $\mu\text{g}/\text{m}^3$ to 150.6 $\mu\text{g}/\text{m}^3$. The minimum and maximum level of RSPM recorded within the study area was in the range of 30.8 to 60.3 $\mu\text{g}/\text{m}^3$ with the 98th percentile ranging between 47.2 $\mu\text{g}/\text{m}^3$ to 60.3 $\mu\text{g}/\text{m}^3$.

The minimum and maximum level of SO₂ recorded within the study area was in the range of 7.6 $\mu\text{g}/\text{m}^3$ to 18.2 $\mu\text{g}/\text{m}^3$ with the 98th percentile ranging between 13.5 $\mu\text{g}/\text{m}^3$ to 16.4 $\mu\text{g}/\text{m}^3$.

The minimum and maximum level of NO_x recorded within the study area was in the range of 11.2 µg/m³ to 25.8 µg/m³ with the 98th percentile ranging between 17.2 µg/m³ to 25.3 µg/m³.

The 24 hourly average values of NO_x, SO₂ SPM and RSPM were compared with the national ambient air quality standards and it was found that all the sampling stations recorded values were much lower than the prescribed standards for residential and rural areas.

Water samples collected from the study area were found to be fit for human consumption. Most of ground water samples seem to be above desirable limit but well within the permissible limits. Most of the heavy metals in all samples are below detectable limits. The MPN count of the surface waters is very high.

The values of noise observed in some of the rural areas are primarily owing to vehicular traffic and other anthropogenic activities. In rural areas wind blowing and chirping of birds would contribute to noise levels especially during the nights. Assessment of day and night noise levels around the study area are ranging between 35.4 to 58.8 dB(A) during study period. The day equivalents during the study period are ranging between 52 to 53.2 dB(A) where as the night equivalents were in the range of 39.4 to 44.2 dB(A). From the results it can be seen that the Day equivalents and the Night equivalents were within the Ambient Noise standards with respect to residential areas standards.

The electrical conductivity of the soil sample in the study area is varying from 185 – 285 µ mhos/cm indicating that soils falling under Normal category. The Total Carbon of the soil sample in the study area is varying from 2.28 – 6.47 %. The available Nitrogen as N in the soil sample of the study area is varying from 23.63 to 97.4 kg/ha indicating that it requires addition of nitrates for proper growth. In the study area available Phosphorus in the soil sample is varying from 4.26 to 97.4 kg/ha, which indicates that all samples are falling in medium range. The available potassium in the soil sample in the study area is varying between 30.23 to 97.55 kg/ha which indicates that all samples are falling in medium category.

1.2.3 Physiography and Drainage

Major portion of the district is drained by River Arkavathi, River Kanva and River Shimsha which are tributaries to the River Cauvery. The Northern portion of the district is drained by North Pinakini (Pennar) and eastern part is drained by South Pinakini (Ponniyar). A small portion of northeastern portion is drained by Polar.

1.2.4 Soil

The soils of Bangalore rural district are broadly classified into: (i) Red loamy soil, (ii) Red sandy soil (iii) Laterite soil and (iv) Laterite gravelly soil.

1.2.5 Population

The population of the District is 38.32 lakhs as per 2001 Census and this constituted 5.0% of the population of the state while the geographical area of the District is 11161 Sq.Kms which is only 4.1% of the area of the state. Out of the total population, 19.30 lakh are males and 19.02 lakhs are females. The Sex Ratio is 985 Females per 1000 Males.

1.3 Anticipated Environmental Impacts and Mitigation Measures

1.3.1 During Construction Phase

The impacts construction phase is short term and are limited to the construction phase. The impacts will be mainly on air, water & sediment quality and socio-economics.

The impacts on the air and noise environment during construction phase could be negated on exercising controls such as sprinkling of water along unpaved roads, provision of acoustic enclosures to construction of machinery, setting up of construction yards away from habitations etc.

Also proper sanitation facilities during construction phase will be provided to the workers on site so to maintain proper sanitation.

1.3.2 During Operation Phase

During operation phase air quality will be effected due emission of gaseous pollutants from the stacks and due to the use of DG sets; Noise environment will be effected due to vehicular movements and due to the industrial equipments; Ground water quantity will be lowered due to the withdrawal of water and quality may get effected due to the storage of solid waste ; Generation of wastewater in the form of effluents from industries and waste water from the toilets and land environment will be effected due to the storage of solid waste.

Mitigation measures for the proposed project are as follows:

1. A common effluent treatment plant is being proposed to treat the wastewater and effluents so as to ensure that there are no adverse impacts on the land and water environment.
2. Solid waste storage sites will be having impervious surfaces so as to prevent groundwater pollution.
3. Effective Solid Waste Management will be implemented by selling the solid waste like metal, scrap, glass, plastic, drums/ carboys etc to the vendors for their further reprocessing. The inorganic sludge generated during operation and maintenance of the plant will be transported to the secured landfill sites.
4. Rainwater Harvesting Pits and Rejuvenation of Lakes have been proposed to increase the level of the ground water table so as to meet the Water demand.
5. The impacts on the air environment during could be negated on exercising controls such as sprinkling of water along unpaved roads, provision of acoustic enclosures to construction of machinery, setting up of construction yards away from habitations etc.
6. The green belt planned for the IDA will act as a buffer between the IDA and the surrounding villages and will negate the impacts due to the noxious odours to a large extent. Green belt planned will also help in mitigating air and noise pollution impacts.
7. KIADB will instruct individual industries to adopt **“Industrial Ecological Concept”** i.e. the waste generated by one industry shall be utilised by the other industry if possible so as minimize the quantity of waste to be disposed off.
8. CETP design also includes a guard pond. Guard pond acts as a stand by unit during the break down of CETP. A Bio – Treatment System may be used as a Guard Pond.

BTS holds the wastewater for certain time (i.e. detention time) and treats the water through aeration process.

1.4 Environmental Monitoring Programme

A comprehensive monitoring program is suggested and discussed hereunder. Well trained and qualified employed staff with well-defined environmental monitoring program would be employed to monitor the ambient air as well as stack emissions. The quality of discharged effluents will maintain within the permissible limits. The post project monitoring works proposed by Industrial Development Area (IDA) is summarized in as per the National Conventions

Table 1.3: Post Monitoring Schedule for Environmental Parameters

Sl. No	Particulars	Monitoring Frequency	Method of Sampling	Monitoring Parameters	
I	Air Quality				
	A	Stack Monitoring			
		Boiler /DG Set	Once in Quarterly (manually)	ISO-Kinetic as per National Convention (CPCB) Standard procedure	SO ₂ & NO _x
	B	Ambient Air Quality Monitoring			
	Inside the Industrial area (4 locations)	Quarterly	24 hrs. continuously as per ACGIH,2005 rules	SPM, RPM, SO ₂ , NO _x , HC	
II	Water and Wastewater Quality				
	A	Industrial Effluents			
		Stored effluents in the holding tanks for sending it to CETP	As per USEPA standards for water and wastewater quality	24hr composite	pH, Turbidity, Electrical Conductivity (Micro siemens), Total Dissolved Solids (TDS) (mg/L), Chlorides as Cl (mg/L), Sulphates as SO ₄ (mg/L), Total Hardness, Magnesium hardness (mg/L), Calcium hardness (mg/L), Phosphates as PO ₄ (mg/L), Dissolved Oxygen (DO) (mg/L),

Sl. No	Particulars	Monitoring Frequency	Method of Sampling	Monitoring Parameters
				Biochemical Oxygen Demand (BOD) (mg/L), Chemical Oxygen Demand (COD) (mg/L), Iron as Fe, Manganese as Mn, Fluorides as F, Nitrates as NO ₃ , Calcium as Ca, MLSS,MLVSS,SVI
B	Water Quality			
	Ground Water in site, Hazard waste storage area	As per WHO standards for drinking water or as per national standards (10500)	Grab sampling	pH, Turbidity, Electrical Conductivity (Micro siemens), Total Dissolved Solids (TDS) (mg/L), Chlorides as Cl (mg/L), Sulphates as SO ₄ (mg/L), Total Hardness, Magnesium hardness (mg/L), Calcium hardness (mg/L), Phosphates as PO ₄ (mg/L), Dissolved Oxygen (DO) (mg/L), Biochemical Oxygen Demand (BOD) (mg/L), Chemical Oxygen Demand (COD) (mg/L), Iron as Fe, Manganese as Mn, Fluorides as F, Nitrates as NO ₃ , Calcium as Ca
III	Industrial Noise Levels			
1	Near admin. office	Once in a Quarterly	8 hr continuous	Noise levels in dB(A)

Sl. No	Particulars	Monitoring Frequency	Method of Sampling	Monitoring Parameters
			with 1 hr interval as per ACGIH,2005 rules	
2	Industrial Workshop	Once in a Quarterly	8 hr continuous with 1 hr interval as per ACGIH,2005 rules	Noise levels in dB(A)
3	Production blocks	Once in a Quarterly	8 hr continuous with 1 hr interval as per ACGIH,2005 rules	Noise levels in dB(A)
4	Utilities	Once in a Quarterly	8 hr continuous with 1 hr interval as per ACGIH,2005 rules	Noise levels in dB(A)
IV	Ambient Noise Levels			
	On the Industrial Boundary in four directions	Once in a Quarterly	Once in three months Day & Night hours. as per IEC standards	Noise levels in dB(A)
V	Soil Quality			
	In core and buffer zone	Once in a Quarterly	Composite Sample as per National Convention	pH, EC (Electrical Conductivity) Na,K,Cl,SO4

1.5 Additional Studies

1.5.1 Public Consultation

Before the preparation of Final EIA Report, public hearing will be conducted for the project as per the provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public will be addressed in the Environmental Management Plan.

Also monitoring of surrounding sensitive areas around the project site will be done to evaluate the problems related to pollution and health of the people in immediate vicinity. The feedback from these discussions will be considered in performance evaluation of pollution control equipments. This will help in establishing good relations with local populations. Identification of water-related diseases, sites, adequacy of local vector control and curative measures, status of public health are some of the parameters which should be

closely monitored twice a year with the help of data maintained in the government dispensaries/hospitals.

1.5.1 Risk Assessment Plan

In the risk assessment plan the following studies are carried out

1. Hazard identification and preliminary hazard analysis
2. Short list of hazards
3. Maximum Credible Accident Analysis
4. Injuries Resulting from Flammable Liquids

1.6 Project Benefits

Concluded Benefits of the Project are as follows

1. The Industrial Development Area (IDA) is located in the rural backward region of the state. The site and surrounding is agricultural land. There are no protected forests, sanctuary, archeological important structures or other sensitive locations in the vicinity of the factory.
2. The concept of Reduce, Recycle and Reuse shall be practiced in the Industrial Development Area (IDA) to conserve resources and minimize wastes.
3. The Industrial Development Area (IDA) has taken all the necessary preventive measures to mitigate even the small effects which may be caused by industrial activities. Therefore, the proposed Industrial Development Area (IDA) will not have adverse effect on the environment or the eco system.
4. The Industrial Development Area (IDA) adopted an effective environment management system and environment management plan to protect the environment. It includes green belt and Greenery development, rain water harvesting, safety and health care facility.
5. Environmental impacts of this Industrial Development Area (IDA) have been thoroughly examined. Based on these impacts the mitigation measures and Environmental Management Plan will be incorporated along with establishment of the project. Considering the positive environmental conditions as above the authorities can take decision to accord Environmental Clearance for the proposed Industrial Development Area (IDA).

1.7 Environmental Management Plan

The purpose of the Environmental Management Plan (EMP) is to minimize the potential environmental impacts from the proposed Sompura Industrial Development Area (IDA) as to mitigate the consequences. EMP reflects the commitment of the Industrial Development Area (IDA) management to protect the environment as well as the neighbouring population.

The potential Environmental Impacts from the project are summarized below:

- Air pollution due to Emissions from Process, boiler, DG sets etc from individual industries.
- Air pollution due to operation of CETP, Hazardous Waste Disposal unit, etc.
- Water pollution due to the disposal of wastewater (after treatment) from CETP.
- Soil Pollution due to disposal of solid waste.

Pre-project Environmental Management includes Environmental Management during the site clearance and during construction phase of the Sompura Industrial Development Area (IDA). The impacts will be felt on the air, water, noise and socio-economic environments.

Environmental Management during Operation

1. EMP for air pollution control: The various control measures adopted at KIADB is summarised in below Table 8.

Table 11.4: Air Pollution Control Measures

Sl. No	Air pollutant	Source	Control
Common Facilities			
1	Dust, SO ₂ , NO _x , Acid Mist	Incinerator	Bag house, Scrubber and Stack height of 30 m minimum will be maintained.
At industry			
1	SPM, SO ₂ , NO _x	Boilers (Industries)	Multi-clone/Bag filters, Stack height meeting MoEF regulations. Minimum stack height of 30 m.
2	SO _x , NO _x , Acid Mist etc.,	Unit Operations (industries)	Scrubbers
3	Chemical and Hazardous Air Pollutants	Fugitive in nature during material flow	Standardization of Equipments and accessories (Engineering Standards)
4	Odorous compounds	Unit Operations	Collection and Thermal Destruction

2. EMP for noise pollution

All the equipment in the proposed industries inside the Sompura Industrial Development Area (IDA) would be designed to have a total noise level not exceeding 85-90 dB (A) as per the requirement of OSHA (Occupational Safety and Health Administration) Standards.

- There are few potential sources (machinery's/equipment's) in the industries that would generate noise levels above 85 dB (A) continuously. Therefore, adequate protective measures in the form of ear muffs/ earplugs to the workers working in high noise areas should be provided.
- The proposed greenbelt within the individual industries will attenuate the noise generated from the respective industries.
- The green belt planted around the perimeter of the proposed Industrial Development Area (IDA) and along the corridors of the internal roads will further soothe the noise emitted.
- The noise levels in the workspace environment will be monitored periodically and if necessary corrective action will be taken.
- All necessary modern noise reducing gadgets will be attached like silencers, anti vibration pads; closed room enclosures will be arranged.

3. EMP for water pollution: In order to negate the impacts on the water environment, infrastructural facilities like provision of adequate storm water drains, effluent collection and conveyance including treatment and disposal have been planned in the Sompura Industrial Development Area (IDA).

4. Solid and Hazardous Waste Management: With respect to the hazardous waste, industries have to store in temporary onsite storage facilities. The disposal of hazardous waste is undertaken by entering into an agreement with the **Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF)**. The CHWTSDF will be designed meeting the hazardous waste treatment and disposal requirements of all its member industries located in the Sompura Industrial Development Area (IDA) meeting the stipulations/requirements of KSPCB.