

## **EXECUTIVE SUMMARY**

**For**

**PROPOSED DEVAKATHIKOPPA INDUSTRIAL AREA  
Over an extent of 185.85 Ha.**

**At**

**Villages: Devakathikoppa and Siddlipura**

**Taluk: Shivamogga**

**District: Shivamogga**

**State: Karnataka**

**By**



**M/s. Karnataka Industrial Areas Development Board  
4<sup>th</sup> & 5<sup>th</sup> Floor, Kanijha Bhavan, Race Course Road, Bangalore**

**Project Termed under Schedule 7(c) – Category B (Appraised under MoEF&CC as Category A due to applicability of General Conditions)**

**EIA CONSULTANTS**

**HUBERT ENVIRO CARE SYSTEMS (P) LIMITED, CHENNAI**

**NABET Certificate No & validity: NABET/EIA/1922/RA 0172 & Valid up to 13.10.2022**

**January 2021**

## EXECUTIVE SUMMARY

### 1. Project back ground

Karnataka Industrial Area Development Board (KIADB) is a wholly owned infrastructure Agency of Government of Karnataka, set up under Karnataka Industrial Areas Development Act of 1966.

The key objectives of KIADB are:

- Promote rapid and orderly development of Industries in the State
- Assist in implementation of Policies of Government within the purview of KIAD Act, 1966.
- Facilitate in establishing infrastructure projects
- Function on “No Profit – No Loss” basis

The functions of KIADB are:

- Land Acquisition and Development of Industrial Areas in the State
- Providing basic Infrastructure in the Industrial Areas
- Land Acquisition for Single Unit Complexes
- Land Acquisition for Government agencies for their schemes and Infrastructure Projects.

Till date, KIADB has formed 132 Industrial Areas spread over 40,000 acres across the State, and acquired land for nearly 473 Single Unit Complexes ensuring balanced Industrial development in all regions with well thought out infrastructure and unique features. Additionally, KIADB has established several innovative projects like Agro-Tech Parks, Apparel Parks, Food Parks, Auto Parks, Hardware Park, Bio-Tech Parks, EIPs, Sector Specific SEZs, and Growth Centres. KIADB is also the implementing agency for the ambitious Suvarna Karnataka Development (SKDC) project.

**Karnataka Industrial Areas Development Board (KIADB)** proposes to establish an Industrial Area in the name of Devakathikoppa Industrial Area to support medium and small-scale industries to get an easy access to ready to use base with supportive infrastructure facilities in the Industrial areas, developed and managed by KIADB. The Industrial Area will be established in an area of 184.85 Ha at Devakathikoppa and Siddlipura Villages, Shivamogga Taluk, Shivamogga District of Karnataka state.

## 1.1 EIA Study

The purpose of this Report is to obtain Environmental Clearance (EC) from Ministry of Environmental, Forests & Climate Change (MoEF& CC), New Delhi as a Category 'A' Project since Secondary Metallurgical processing industries with capacity > 30,000 TPA (Rerolling industries) and CETP are proposed (If at least one industry in the proposed industrial estate falls under the Category B, entire Industrial Park shall be treated as Category B, irrespective of the area). For this project, General Condition – **[Shettihalli Wild Life Sanctuary/Anesara Reserve Forest at a distance of 1.81 km towards SW from the project site]** is applicable. Hence the project will be appraised in MoEF&CC as Category A project.

## 1.2 Type of industry proposed

**Table 1 Type of industry proposed for the Industrial Park**

SNo	Type of industries Proposed	Schedule & Category as per EIA Notification 2006 and its amendments	CPCB Classification	Area (Acres)	Area (Ha)	Plotted Area (%)	Applicability of General Conditions
<b>EC Category Industries</b>							Shettihalli Wild Life Sanctuary/Anesara Reserve Forest ~ distance 1.81 km (SW)  Hence the project will be appraised at MoEF&CC as Category A
1	Secondary Metallurgical Processing industries (Rerolling mills - capacity >30,000 TPA)	3(a) –B	Red	50.0	20.24	37.1	
2	CETP – For industries within the Industrial Area	7(h)	Red				
<b>Non EC category Industries</b>							
3	Foundry units <5MT/Hr	Nil	Orange	24.0	9.71	17.8	
4	Fabrication	Nil	Orange	20.62	8.34	15.3	

SNo	Type of industries Proposed	Schedule & Category as per EIA Notification 2006 and its amendments	CPCB Classification	Area (Acres)	Area (Ha)	Plotted Area (%)	Applicability of General Conditions
5	Textile Processing	Nil	Red	12.47	5.05	9.3	
6	Soaps, Detergents and cosmetics	Nil	Orange	10.5	4.25	7.8	
7	Forging of metals	Nil	Orange	13.4	5.42	9.8	
8	Auto Complex	Nil	Red	3.91	1.58	2.8	
	<b>Total</b>			<b>134.9</b>	<b>54.59</b>	<b>100</b>	

## 2. Project location

Karnataka Industrial Areas Development Board (KIADB) proposes to establish an Industrial Area Development in an area of 184.85 Ha at Devakathikoppa and Siddlipura Villages, Shivamogga Taluk, Shivamogga District of Karnataka state.

### 2.1 Site Salient features

**Table 2 Salient features of the project site and surrounding features**

S. No	Features	Description
1.	Name of the Project	"Proposed Devakathikoppa Industrial Area over an extent of 185.85 Ha".
2.	Developer	Karnataka Industrial Area Development Board
3.	Total Land Area of the Project Site	185.85 Ha (459.24 acres).
4.	Geographical Location of the Project site	Villages: Devakathikoppa and Siddlipura, Taluk & District: Shivamogga, State: Karnataka Latitude: 13°59'47.40"N Longitude: 75°30'48.34"E (*Note: Reference- KIADB GIS Site)
5.	Elevation	622m to 643m above MSL
6.	Nearest Village	Devakathikoppa ~0.5 km and Siddlipura ~1.5 km
7.	Nearest Railway station	Shivamogga Railway Junction is ~8.3 km towards SSE
8.	Nearest Highway	SH 57~6.26 km towards SE (Shimoga- Chikmagalur- KR

S. No	Features	Description																																																																																							
		Nagar) and NH 206 ~1.81 km towards West (Chittoo – Honnavar)																																																																																							
9.	Nearest Airport	Mangalore Airport ~135.43 km towards SSW Shivamogga Airport (under construction) ~18.08 km towards SSW																																																																																							
10.	Nearest major Town	Shivamogga~6 km (SSE)																																																																																							
11.	Nearest Port	Mangalore Port ~142.27 km towards SSW																																																																																							
12.	Reserved Forest/Protected Forest/Notified Wildlife Sanctuary /Ecologically sensitive areas	<table border="1"> <thead> <tr> <th>Details</th> <th>~Distance Km</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>Siddalpur Minor Forest</td> <td>Inside Site</td> <td>-</td> </tr> <tr> <td>Devalalu RF</td> <td>Adjacent</td> <td>-</td> </tr> <tr> <td>Muddinakoppa RF</td> <td>1.51</td> <td>WSW</td> </tr> <tr> <td>Shettihalli WLS/ Anesara RF</td> <td>1.81</td> <td>SW</td> </tr> <tr> <td>Kunchenhalli RF</td> <td>3.14</td> <td>NE</td> </tr> <tr> <td>Puradahal RF</td> <td>4.63</td> <td>SSW</td> </tr> <tr> <td>Biranakere RF</td> <td>5.98</td> <td>NE</td> </tr> <tr> <td>RF</td> <td>6.63</td> <td>S</td> </tr> <tr> <td>Suttakote RF</td> <td>7.02</td> <td>NNE</td> </tr> <tr> <td>Hubbanahalli MF</td> <td>8.07</td> <td>WNW</td> </tr> <tr> <td>Kesavinakatte MF</td> <td>8.53</td> <td>NNW</td> </tr> <tr> <td>RF</td> <td>8.63</td> <td>SSE</td> </tr> <tr> <td>Minor Forest</td> <td>8.76</td> <td>WNW</td> </tr> <tr> <td>Kudi RF</td> <td>9.24</td> <td>WSW</td> </tr> <tr> <td>Mandaghatta MF</td> <td>9.35</td> <td>W</td> </tr> <tr> <td>Chikka Danavandi MF</td> <td>9.44</td> <td>WNW</td> </tr> <tr> <td>Shankargudda RF</td> <td>9.91</td> <td>SW</td> </tr> <tr> <td>Haramgatta RF</td> <td>10.42</td> <td>NE</td> </tr> <tr> <td>Kumsi RF</td> <td>10.58</td> <td>NW</td> </tr> <tr> <td>Ragihosahalli MF</td> <td>10.87</td> <td>WNW</td> </tr> <tr> <td>Basavapura MF</td> <td>11.05</td> <td>S</td> </tr> <tr> <td>Sakrebailu RF</td> <td>11.12</td> <td>S</td> </tr> <tr> <td>Suragondanakoppa MF</td> <td>12.15</td> <td>NW</td> </tr> <tr> <td>Gajanuru RF</td> <td>12.44</td> <td>S</td> </tr> <tr> <td>Suduku MF</td> <td>12.81</td> <td>WNW</td> </tr> <tr> <td>Kudrekonda RF</td> <td>14.09</td> <td>N</td> </tr> <tr> <td>Kempinakatte MF</td> <td>14.3</td> <td>NW</td> </tr> <tr> <td>Suduru RF</td> <td>14.33</td> <td>WNW</td> </tr> </tbody> </table>	Details	~Distance Km	Direction	Siddalpur Minor Forest	Inside Site	-	Devalalu RF	Adjacent	-	Muddinakoppa RF	1.51	WSW	Shettihalli WLS/ Anesara RF	1.81	SW	Kunchenhalli RF	3.14	NE	Puradahal RF	4.63	SSW	Biranakere RF	5.98	NE	RF	6.63	S	Suttakote RF	7.02	NNE	Hubbanahalli MF	8.07	WNW	Kesavinakatte MF	8.53	NNW	RF	8.63	SSE	Minor Forest	8.76	WNW	Kudi RF	9.24	WSW	Mandaghatta MF	9.35	W	Chikka Danavandi MF	9.44	WNW	Shankargudda RF	9.91	SW	Haramgatta RF	10.42	NE	Kumsi RF	10.58	NW	Ragihosahalli MF	10.87	WNW	Basavapura MF	11.05	S	Sakrebailu RF	11.12	S	Suragondanakoppa MF	12.15	NW	Gajanuru RF	12.44	S	Suduku MF	12.81	WNW	Kudrekonda RF	14.09	N	Kempinakatte MF	14.3	NW	Suduru RF	14.33	WNW
		Details	~Distance Km	Direction																																																																																					
		Siddalpur Minor Forest	Inside Site	-																																																																																					
		Devalalu RF	Adjacent	-																																																																																					
		Muddinakoppa RF	1.51	WSW																																																																																					
		Shettihalli WLS/ Anesara RF	1.81	SW																																																																																					
		Kunchenhalli RF	3.14	NE																																																																																					
		Puradahal RF	4.63	SSW																																																																																					
		Biranakere RF	5.98	NE																																																																																					
		RF	6.63	S																																																																																					
		Suttakote RF	7.02	NNE																																																																																					
		Hubbanahalli MF	8.07	WNW																																																																																					
		Kesavinakatte MF	8.53	NNW																																																																																					
		RF	8.63	SSE																																																																																					
		Minor Forest	8.76	WNW																																																																																					
		Kudi RF	9.24	WSW																																																																																					
		Mandaghatta MF	9.35	W																																																																																					
		Chikka Danavandi MF	9.44	WNW																																																																																					
		Shankargudda RF	9.91	SW																																																																																					
		Haramgatta RF	10.42	NE																																																																																					
		Kumsi RF	10.58	NW																																																																																					
Ragihosahalli MF	10.87	WNW																																																																																							
Basavapura MF	11.05	S																																																																																							
Sakrebailu RF	11.12	S																																																																																							
Suragondanakoppa MF	12.15	NW																																																																																							
Gajanuru RF	12.44	S																																																																																							
Suduku MF	12.81	WNW																																																																																							
Kudrekonda RF	14.09	N																																																																																							
Kempinakatte MF	14.3	NW																																																																																							
Suduru RF	14.33	WNW																																																																																							

S. No	Features	Description		
		Details	~Distance Km	Direction
13.	Water Bodies	LB Irrigation Canal	4.51	S
		Bare Halla	5.04	S
		Tunga Anecut WBC	6.43	SSE
		Puradalu Dam	7.53	SSW
		Sige Halla Canal	7.54	W
		Savalanga Canal	9.65	N
		Tunga River	9.71	SSW
14.	National Parks /Wild Life Sanctuary	1. Shettihalli WLS ~1.81 Km* (SW) 2. Tyavarekoppa Lion and Tiger Reserve ~1.86 Km (SSW) (located in Shettihalli WLS) *Note: Reference- KIADB GIS site Coordinates		

## 2.2 Magnitude of operation

The total Area of the proposed project site is 184.85 Hectares. Of this, 32.37 Ha (80 Acres) has been allotted to RR Housing Corporation, 44.74 Ha (110.56 Acres) will be allotted to KSSIDC and remaining 110.29 Ha (250.55 Acres) will be the developable area. The proposed area to be developed is 101.39 Ha (250.55 Acres). Entire land has been acquired by KIADB for proposed Industrial Area Development. Land documents for the project are enclosed as **Annexure-2** of EIA report.

Apart from industrial plots, common amenities like water supply system, storm water drainage system, Administrative building, Municipal Solid waste management area, parking area, CETP, CSTP, green belt buffer, Commercial area are proposed for the project. The Area break up for the proposed Industrial Area is given in **Table 3**. Layout of Proposed Industrial Area is given as **Annexure-3** of EIA report.

**Table 3 Area break up for the project**

S.No	Description	Proposed		
		Area in Ha	Area in Acres	%
1	Industrial Area	53.01	130.99	53.84
	Auto Complex sub layout	1.58	3.91	
2	Commercial Area	0.49	1.22	0.48
3	Amenities	3.54	8.71	3.47
4	Lakes, pond and open space	10.29	25.44	10.15
5	Buffer and parks (Green belt)	13.25	32.72	13.34
	Auto Complex Buffer (green belt)	0.28	0.70	
6	Parking	2.02	5.00	2.0

S.No	Description	Proposed		
		Area in Ha	Area in Acres	%
7	Utilities	1.4	3.47	1.38
8	Storm water drain	0.28	0.70	0.27
9	Industry Roads	14.22	35.14	15.03
	Auto complex roads	1.03	2.55	
	<b>Total</b>	<b>101.39</b>	<b>250.55</b>	<b>100</b>
10	R.R.Housing Corporation	32.38	80.0	
11	KSSIDC & others	44.74	110.56	
12	Railway area	5.81	14.35	
13	Not acquired area	1.53	3.78	
	<b>Total</b>	<b>185.85</b>	<b>459.24</b>	

## 2.3 Water requirement

### 2.3.1 Construction Phase

Water requirement for construction phase is estimated to be 35 KLD. Basic amenities like roads, storm water drainage, Administration building, power supply Occupational health Centre and water supply system will be constructed by KIADB. Around 100 employees will be working during construction phase. Water requirement during construction Phase will be sourced from private water suppliers.

### 2.3.2 Operation Phase

Total water requirement for operation phase is estimated to be 2709 KLD. Fresh water requirement of 1681.5 KLD is proposed to be sourced from Tungabhadra River. The balance 1027.5 KLD (319 KLD water for utilities, 465.5 KLD for process, 243 KLD for greenbelt) of water will be met from recycling of treated wastewater.

## 2.4 Power and fuel requirement

Power requirement for the Industrial Park is estimated to be 23 MVA. Apart from this 2x250 KVA and 1x500 KVA DG sets are proposed as power back up for common facilities. Individual industries will have their own power back up in case of power failure.

## 2.5 Solid waste generation and management

### 2.5.1 Municipal solid waste generation and management

During operational phase, 2790 Kg/day of Municipal Solid Waste will be generated. The wastes will be segregated by individual industries and organic wastes will be

sent to common MSW processing area. This will be composted at site in area earmarked for municipal waste processing. Compost will be used as manure for green belt development. Inorganic wastes will be sold to recyclers. Approximately 1.0 Acre will be allotted for MSW processing in area allotted for common Amenities

### **2.5.2 Construction Waste Management**

Most of the construction materials like soil, bricks, concrete will be reused in the backfilling, road construction, sub-grade preparation etc. works. Metals, wood scraps & bitumen junks will be used for road laying purpose or disposed outside as per C&D rules 2016. The measures like reusing materials on-site and /or donating /selling salvaged items reduces waste, virgin material use and disposal cost. Vegetation and combustible waste will not be burnt at site.

Reusable inorganic waste (e.g. excavated sand) will be stockpiled away from drainage features and used for in filling where necessary.

Unusable construction waste, such as damaged pipes, formwork and other construction material, will be disposed off at an approved dumpsite.

### **2.5.3 Hazardous waste generation and management**

Individual industries will have their own storage area for storing Hazardous waste, within their premises and the hazardous wastes will be sent by individual industries to nearby authorised recyclers/ vendors/ TSDF for recycling /disposal as per the Hazardous and other Wastes (Management and transboundary movement) rules 2016.

**CETP sludge and salt generated from ATFD, will be stored in designated area within the Industrial Area and will be disposed to nearby TSDF.**

### **2.6 Manpower requirement**

During construction phase, man power requirement will be 100 nos. and during operation phase, the man power requirement will be 6200nos.

### **2.7 Project Cost**



The proposed Industrial Area Development will be established in an area of 185.85 Ha with an estimated project cost Rs.2568 Lakhs (approx.) for Land, Infrastructure Development and Environmental Management

### 3. Environmental Baseline Data

Baseline data was collected from January 2020 to March 2020

#### 3.1 Micrometeorology

S. No	Parameter	Observation
1.	Temperature	Minimum Temperature: 21 °C Maximum Temperature: 36 °C Avg Temperature: 27.92 °C
2.	Average Relative Humidity	68.29%
3.	Average Wind Speed	2.59 m/s
4.	Predominant Wind Direction during monitoring period	West

#### 3.2 Ambient Air Quality

The Ambient Air Quality has been monitored at 8 locations for 12 parameters as per CPCB guidelines within the study area. The average baseline levels for Study period (March 2020 - May 2020) were

- PM<sub>10</sub> ranged from 40.92 to 51.34 µg/m<sup>3</sup>
- PM<sub>2.5</sub> ranged from 21.24 to 26.41 µg/m<sup>3</sup>
- SO<sub>2</sub> ranged from 6.73 to 10.97 µg/m<sup>3</sup>
- NO<sub>x</sub> ranged from 14.51 to 22.34 µg/m<sup>3</sup>
- O<sub>3</sub> ranged from 10.76 to 12.27 µg/m<sup>3</sup>
- NH<sub>3</sub> ranged from 5.94 to 7.83 µg/m<sup>3</sup>
- All the parameters are well within the National Ambient Air Quality Standards for Industrial, Commercial and Residential areas at all monitoring locations during the study period of Jan 2020 to March 2020.

#### 3.3 Ambient noise Quality

Noise levels were monitored at 8 locations within the study area. The observations of day equivalent and night equivalent noise levels at all locations for the study period March 2020 - May 2020 are given below.

- In Industrial area day time noise level was 51.2 dB(A) and 40.7 dB(A) during night time, which is within prescribed limit by CPCB (75 dB(A) Day time & 70 dB(A) Night time).
- In residential areas day time noise levels varied from 52.4 dB(A) to 54.7 dB(A) and night time noise levels varied from 41.8 dB(A) to 44.2 dB(A) across the sampling stations. The field observations during the study period indicate that in all locations the ambient noise levels is within the prescribed limit by CPCB (55 dB(A) Day time & 45 dB(A) Night time).

### 3.4 Surface water Quality

Surface water quality was monitored at 3 locations during monitoring period (January 2020- March 2020).The results are discussed below:

- pH in the collected surface water samples varies between 7.16 to 7.72 where all the samples are within the limit of IS 2296:1992
- The Total Dissolved Solids (TDS) value of collected surface water sample ranges from 368 mg/l to 662 mg/l.
- The Total hardness value of the collected surface water sample ranges between 151 mg/l to 298.9 mg/l.
- BOD value of the collected surface water sample ranges from 2.7 mg/l to 8.5 mg/l.
- COD value of collected surface water varies from 6.8 to 21.5 mg/l.
- The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se are within the limits of IS 2296:1992.

### 3.5 Ground water Quality

Ground water quality was monitored at 8 locations during monitoring period (January 2020 – March 2020). Summary of analytical results of ground water collected from the study area are presented below:

- The ground water results of the study area indicate that the pH range varies between 6.51 and 7.45. It is observed that the pH range is within the permissible limit of IS 10500:2012.
- The Total Dissolved Solids range of the collected ground water sample is varied between 358 mg/l – 696 mg/l. All the samples are within the permissible limit of IS 10500: 2012.

- The acceptable limit of the chloride content is 250mg/l and permissible limit is 1000 mg/l. The chloride content in the collected ground water samples in the study area ranges between 56.9 mg/l – 166.5 mg/l. It is observed that all the samples are within the acceptable limit of IS 10500:2012.
- The acceptable limit of the sulphate content is 200mg/l and permissible limit is 400mg/l. The sulphate content in the collected ground water samples in the study area is varied between 17.7 mg/l – 52.37 mg/l. It is observed that all the samples are meeting the acceptable limit of the IS 10500: 2012.
- The Total hardness ranges is between 175 mg/l – 400 mg/l for ground water samples. It is observed that all the samples are within the permissible limit of the IS 10500: 2012.
- It is observed that the entire ground water sample collected within the study area are meeting the drinking water standards IS 10500:2012.

### **3.6 Soil quality**

Summary of analytical results for the soil samples collected at 8 locations in the study area during study period are as follows:

- The pH of the soil samples ranged from 6.59 to 7.67 Indicating that the soils are neutral to slightly alkaline in nature.
- Conductivity of the soil samples ranged from 108 to 436  $\mu$ mhos/cm.
- Nitrogen content in the collected soil samples ranged from 183 mg/kg to 318 mg/kg.
- Phosphorous content ranged from 69 mg/kg to 194 mg/kg.
- Potassium content ranges from 134 mg/kg to 329 mg/kg.

### **3.7 Ecology**

The District is noted for its rich and varied flora. There is a rapid transition from evergreen flora to scrub type as one move from west to the east. The evergreen forest is confined to a narrow belt in the west where most of the hills are clothed with heavy forest growth and the ravines and valley are covered with luxuriant trees known for their immense height and size. The moist deciduous forests are found in the extreme north of Soraba Taluk. Variety Areca nut is an important cash crop and Shimoga is one of timber producing trees and sandalwood is found here. Shimoga is noted for Areca and coconut gardens as well.

The district is quite rich in the fauna wealth also. Important wild animals found in the forests of the district are elephants, bisons, antelopes, sambars, tigers, panthers, leopards, barking deer, wild pigs, black monkeys, jungle cats, bears, red squirrels and porcupines. Important birds that are found here are tree pie, jungle crow, grey tit, yellow cheeked herons, storks and peacocks. There is a natural bird sanctuary near Mandagadde village of Tirthahalli taluk.

Shettihalli WLS is located ~1.81 Km\* (SW) and Tyavarekoppa Lion and Tiger Reserve is located at ~1.86 Km (SSW)

### 3.8 Socioeconomic environment

Social indicators of the Shimoga district are given in **Table 4** below.

**Table 4 Social Indicators of Shimoga District**

S.No	Social Indicators	Shimoga District
1	Decadal variation %	6.71
2	Urban population %	35.59
3	Sex ratio	998
4	0-6 age group %	10.43
5	Population density (Persons per square Km)	207
6	Scheduled caste population %	17.58
7	Scheduled tribe population %	3.73
8	Literacy rate %	80.45
9	Work Participation rate %	44.54
10	Main Workers %	83.63
11	Marginal Workers %	16.37
12	Cultivators %	18.99
13	Agricultural labourers %	48.66
14	Workers in household industries %	2.35
15	Other workers %	30.00

### 4. Impact on Air environment due to proposed industries

Air quality modelling was done using AERMOD software to identify the ground level concentration due to operation of proposed industries. The details on the type of fuel proposed, emissions are given in **Table 4-1** of the EIA report. Based on the modelling done, the total ground level concentrations are given in **Table -5**.

**Table 5 Total concentration from proposed stacks (controlled emissions)**

Pollutant	Max. Base line Conc. ( $\mu\text{g}/\text{m}^3$ )	Estimated Incremental Conc. ( $\mu\text{g}/\text{m}^3$ )	Total Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQ standard ( $\mu\text{g}/\text{m}^3$ )	% increase
PM <sub>10</sub>	61.01	7.59	68.6	100	12.5
SO <sub>2</sub>	13.03	52.39	65.4	80	402.1
NO <sub>x</sub>	26.55	25.82	52.4	80	97.3

From the above table, it is evident that due to the emissions from the proposed project, the total Concentrations for PM, SO<sub>2</sub> and NO<sub>x</sub> are well within the NAAQ Standards.

For Modelling purpose, Anthracite Coal was used as fuel for both boilers and Furnaces to identify the worst case scenario.

It is recommended to use Natural Gas/ Bio briquettes as fuel for boilers and furnaces to further reduce the SO<sub>2</sub> and NO<sub>x</sub> emissions from the project.

#### **5. Alternate site consideration**

No alternate sites were considered for the project.

- Entire land for the proposed Industrial Area has been acquired by KIADB and there is no habitation within the project site.
- There is no forest land within the project site.
- Water Source (Tungabhadra River) is ~10 Km from project site.

#### **6. Environmental Monitoring Programme**

A monitoring schedule with respect to Ambient Air Quality, Water Quality, Soil and Noise as per CPCB/MoEF&CC will be adopted during construction phase and after establishment of the project. Details are given in **Tables 6-1** and **6-2** of EIA report.

#### **7. Rehabilitation and Resettlement**

The project site is free from habitation. The entire extent of land has been acquired by KIADB. Hence, there is no Rehabilitation and Resettlement for this project.

#### **8. Environmental Management Plan**

##### **8.1 Air Environment**

- Individual industries will be mandated to have Air Pollution control measures as per CPCB /KSPCB guidelines.
- Industries proposing boilers will be mandated to provide cyclone separator followed by bag filter followed by proper stack height as air pollution control measures.

- Industries proposing furnaces will be mandated to provide Spark arrestor and bag filter systems
- Adequate green belt will be developed to mitigate the pollution arising due to proposed project.
- Ambient air Quality monitoring will be carried out on regular basis and if the values are exceeding the NAAQ standards, proper mitigation measures will be mandated for individual industries.

## **8.2 Water Environment**

- Sewage generation of **243 KLD** will be treated in common STP of 300 KLD and treated sewage of 243 KLD will be recycled for green belt development. CSTP specifications and process flow are enclosed as **Annexure-5** of EIA report.
- The effluent generation of 798 KLD will be treated in CETP of 1000 KLD and treated effluent of 784.5 KLD will be recycled for utilities and process. CETP specifications and process flow are enclosed as **Annexure-6** of EIA report.

## **8.3 Noise Environment**

- All the noise generating equipments will be designed / operated to ensure that noise level does not exceed 75-70 dB (A) at plant boundary as per the requirement of Central / State Pollution Control Board.
- Noise generating sources will be maintained properly to minimize noise generated by them.
- Wherever feasible, acoustic enclosures will be provided for compressors, DG sets.
- Compliance with noise control norms will be given due importance at the time of purchase of various equipments and it will be mentioned while placing the purchase orders and guarantee for noise standards will be sought from suppliers.
- Green belt will act as a noise barrier.

- Training will be imparted to personnel to generate awareness about effects of noise and importance of using PPEs.

#### **8.4 Land Environment**

- Domestic organic Solid wastes generated during the operation phase will be composted by individual industries and used as manure. Inorganic solid Wastes will be sold to authorised recyclers.
- Individual industries will have their Air Pollution Control Measures to control the release of air pollutants to a greater extent. In addition, thick green belt will attenuate air pollutants released into the environment.
- During operation phase, sewage generated from individual industries will be treated in CSTP of 300 KLD and effluent generation of 798 KLD will be treated in CETP of 1000 KLD. Zero Liquid Discharge system is proposed for the project.
- Noise generating sources will be maintained properly to minimize noise generated by them.
- Green belt development will help in abatement of air and noise pollution and will improve the aesthetics of the Industrial Park.

#### **8.5 Ecology**

There is Shettihalli Wildlife sanctuary/Anesara RF at a distance of 1.81 km towards SW from the project site.

- Water environment- The water will be sourced from Tungabhadra river through pipelines. There is no extraction of ground water and the local community will not be affected
- Effluent will be treated in CETP and treated effluent will be utilized for process and utility. Zero liquid discharge (ZLD) will be implemented. So there is minimum impact in soil and ground water.
- Sewage will be treated in CSTP. The treated sewage will be used for Green belt development within the proposed industrial area

- Storm water will be managed and controlled within the premises and utilized for rain water harvesting. The excess flow will be diverted to nearest lake / pond.
- Air Pollution: Individual industries will be mandated to provide Air Pollution control measures for dispersion of flue gases as per CPCB/ KSPCB guidelines.
- Solid and Hazardous waste: Individual industries will segregate their solid waste. Organic waste will be composted in common municipal waste processing area and converted into manure. Inorganic waste will be disposed to KSPCB authorized recyclers. Hazardous waste will be disposed to KSPCB authorized TSDF/recyclers as applicable by individual industries.
- Noise: Individual industries will be mandated to provide 33% green belt in their area. Apart from this KIADB is providing 14.13 % green belt area around the project site and periphery. Individual industries will provide acoustic enclosures for their D.G.sets.
- Environmental Monitoring: KIADB will be conducting periodical monitoring of AAQ, noise, water, soil and traffic, to ensure the parameters are within the prescribed limits.

In light of the above there will be marginal impact to Shettihalli Wild Life Sanctuary due to the proposed Industrial Area.

Application has been submitted to NBWL for NOC.

## **8.6 Green belt development**

The total land area is 185.85 Ha (459.24 Acres), out of which developable area is 101.39 Ha. The Greenbelt area proposed is 33.45Ha (33 % of total Developable area). To achieve 33% of green belt, KIADB is proposing 14.31 Ha (14.11 % of developable area) and individual industries will be mandated to provide 19.14 Ha (18.89% of developable area) of green belt area. It is proposed to plant 40,140 (1200 trees / ha) no of trees in the Industrial Area premises.



### 8.7 Budgetary provisions for EMP

Sl.No.	Activity	Capital cost (Lakhs)	Recurring Cost (Lakhs)
1	CSTP	80	20
2	CETP	300	50
2	Water supply system, conveyance for water supply, sewage and effluent	250	25
3	Storm water drains,	50	5
4	Greenbelt development	5	2
5	Municipal Solid Waste management	20	5
6	Occupation health Centre	10	15
7	Environmental Monitoring	0	3.5
<b>Total</b>		<b>715</b>	<b>125.5</b>

### 8.8 Proposed CER activities

Around INR 51.36 Lakhs will be spending for the CER Activity. The activity proposed is only tentative. Based on the issues raised during Public Hearing the activities will be finalised. The details are given in **Section 10.7** of EIA report.

### 9. Project Benefits

- There will be an opportunity for job at different cadres and work force.
- This project will have positive impact on the socio economic status of the surrounding human environment and increased inflow of revenue to the Karnataka Government.
- Proposed Industrial Park will help in revenue generation for the State as well as to the Country.