Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC)

Proposed Mega Industrial Park (North Block) of M/s. Andhra Pradesh industrial infrastructure Corporation Ltd. (APIIC) at Kopparthy, Yadavapuram, T G Palli, Ambavaram villages, in YSR Kadapa District, Andhra Pradesh

Executive Summary of Draft EIA-EMP Report

November, 2021

Proposal No: SIA/AP/NCP/48583/2019
SIA/AP/NCP/222380/2021

Sector: 7 (c): 'Industrial Estates/ Parks/ Complexes/ areas, Export Processing Zones (EPZs),…Biotech park, Leather complexes' (Category B)

EIA CONSULTANT

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1 EXECUTIVE SUMMARY

1.1 Introduction of the Project

Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) incorporated on 26th September, 1973 is the premier organization in the State of Andhra Pradesh, vested with the objective of providing industrial infrastructure through the development of industrial areas. APIIC is a wholly owned undertaking of Government of Andhra Pradesh (GoAP). APIIC is the nodal agency notified by GoAP.

APIIC has taken up the task of development of Industrial hubs in the newly formed state of Andhra Pradesh and promoting growth of specific and multi product Industrial Parks. As part of this initiative APIIC proposed a Mega Industrial Park at Kopparthy village in Chinthakommadinne Mandal and Thollaganganapalli, Yadavapuram and Ambavaram village in Vallur mandal of YSR Kadapa District, Andhra Pradesh having an area of 997.59 Acres (403.71 Ha). The estimated investment for proposed Mega Industrial Park would be INR 424.55 crores.

1.1.1 Identification of the Project & Requirement of EIA

The proposed project identified in the lands of Kopparthy, Thollaganganapalli, Yadavapuram & Ambavaram village in Chinthakommadinne and Vallur mandal of YSR Kadapa District, where area has been surveyed with an area of 997.59 acres having following khasra numbers according the land revenue record. Kopparthy Village - S. Nos. 47-48, 50-53, 56- 59, 75-82, 90-91, 93-103, 108, 109, 112-118, 435-439, 449-455, 457; Yadavapuram Village -S. Nos. 4–32, 35-50, 54-56, 60- 63, 65-132.; Thollaganganapalli Village -S. Nos. 366 and Ambavaram Village- S. Nos. 1264. The project is identified as development of industrial park, which attract SO 1533 dated 14th September, 2006 (EIA Notification) for prior Environment Clearance and the project activity is covered under Industrial estates/ parks/ complex/ Area, export processing Zones (EPZs), Special economic zones (SEZs), Biotech Parks, Leather Complexes project of sector S.N.7(c) of the schedule under EIA Notification, 2006 and amendment thereof. Considering the area proposed for the project, it is coming below 500 Ha., and application for the prior EC has been submitted as category B project in SEAC, AP vide application no. SIA/AP/NCP/48583/2019 and TOR has been granted on 26.02.2020. The amendment application was applied on 29.07.2021 vide application no. SIA/AP/NCP/222380/2021 and TOR was issued on 27.09.2021. The draft EIA-EMP Report has been prepared in accordance the terms of References issued by SEAC/SEIAA, AP for the project. Currently the draft EIA-EMP Report is being submitting to the Pollution Control Board, Andhra Pradesh (APPCB) for the requirement of Public Hearing Process.

1.1.2 Need of the Project

The need for the Mega Industrial Park (North Block), covering an area of 997.59 Acers (403.71 Ha), in YSR Kadapa District, has therefore been considered in context of and socio-economic development of the region. Being a future high growth area and considering stakeholder interest following sectors has especially been considered in line with the Market Assessment study conducted for the project.

The Market Demand Assessment study for the project reveals that Renewable energy sector, Auto-component, metallic and non-metallic manufacturing are the major sectors which may develop in the area in near future with maximum demand assessed. In addition, Food and Agro, Chemical and Petro-chemical sector also identified with potential for development for large and mega industries. In MSME cluster, market demand assessment identified Food & Agro, Chemical and Petro-chemical (mainly Plastics, chemical, synthetic rubbers), Bulk Drugs & Pharmaceuticals are the dominant sector for development.

In the view of Environmental consideration, only category B type and moderate to less-polluting industries has been considered for proposed industrial park. Thus, from Market Demand Assessment, only category B type industries of Auto component, metallic and non-metallic, Food and Agro, Bulk Drug and Pharma (Bulk Drug, Formulation, Synthetic/Basic Chemicals) has been proposed for the industrial park, which are in line with the conditions stipulated and prescribed in EIA Notifications, 2006 and amendment thereof,

TOR issued for the project. In pollution consideration, close proximity of Airport, close proximity of some village habitations, drainage pattern of the area has been considered during master planning and zoning of the industries and accordingly best suitable and sustainable zoning plan has been proposed for the project. The Market Assessment and Industrial Zoning has been detailed out in chapter 2, section 2.8 to 2.10, page no. 39-45 of EIA-EMP Report.

1.2 Project Description

The Proposed Industrial Park is located at Kopparthy and adjacent villages, close to Kadapa Airport in YSR Kadapa district. The proposed site is stretches between East 78°45'00" E to West 78°44'04" E and North 14°31'27" N to South 14°28'47" N. Salient features of the project is presented in Table 1.

Table 1: Salient Features of proposed Mega Industrial Park in Kopparthy

Name of the Project	Mega Industrial Park (North Block) of M/s. Andhra Pradesh industrial infrastructure Corporation Ltd. (APIIC) at Kopparthy, Yadavapuram, T G Palli, Ambavaram villages, in YSR Kadapa District, Andhra Pradesh
Land Area	**997.59 acres/ 403.71 Ha.**
Survey/Khasra Numbers	Kopparthy Village - S. Nos. 47-48, 50-53, 56-59, 75-82, 90-91, 93-103, 108, 109, 112-118, 435-439, 449-455, 457 Yadavapuram Village -S. Nos. 4–32, 35-50, 54-56, 60- 63, 65-132. T.G. Palli Village -S. Nos. 366 Ambavaram Village- S. Nos. 1264
Land Coordinates	East 78°45'00" E to West 78°44'04" E and North 14°31'27" N to South 14°28'47" N
Nearest Village habitation	Ambavaram- 0.35 km (NW) Kopparthy- 0.40 km (S)
Nearest Railway Station	Krishnapuram - ~4.5 Km (E)
Nearest City in Kms	Kadapa- ~6.5 km in areal distance and ~10.0 km in roadways distance towards East from the site.
Nearest Airport	Kadapa Airport- ~5.0 km in roadways distance and 0.5 km in aerial distance towards North east from the site.
Nearest Highway	NH-40- ~ 5.0 Km (E), connected through SH 51 and MDR 214.
Nearest Water Bodies	1. Penna/Penneru River-NW to NE (~6.48 km) 2. Papagni River-SW to NW (~8.65 km) 3. Cuddapah-Kurnool Canal-ENE (~3.42 km) 4. Buggavanka Canal NE to SE (~6.20 km) 5. Devuni Kadapa Lake towards East ((~7.60 km)
Water Supply	The proposed project will require 100 KLD during construction phase and 6.7 MLD of water, which shall be sourced from the Somasila Reservoir (located NE from site, water supply distance would be ~40 km.
Manpower Required	Total manpower proposed- 68,319
Working Hours	3 shifts in a day
Type of Industries Proposed	Food, Agro and Marine products; Metallic and Non-Metallic Mineral Products; Bulk Drugs, Pharmaceuticals, Chemicals; Auto Component accessories manufacturing;
Categorization of Industries (CPCB, 2016)	**Food, Agro, marine Products** ▪ Grain mill & starches – Starch-Sl. No. 49 of orange; Grain mill- Sl. No. 16, 20 of Green category ▪ Fertilizer-granulation, Formulation, Blending only - Sl. No. 29 of Orange Category

Name of the Project	Mega Industrial Park (North Block) of M/s. Andhra Pradesh industrial infrastructure Corporation Ltd. (APIIC) at Kopparthy, Yadavapuram, T G Palli, Ambavaram villages, in YSR Kadapa District, Andhra Pradesh
	Metallic and Non-Metallic Mineral Products ▪ Casting of metals- Sl. No. 28 of Orange Category ▪ Glass- Sl. No. 45 of Orange Category ▪ Ceramic tiles- Sl. No. 22 of Orange Category ▪ Granite/ Quartz stone- Sl. No. 64 of Orange Category ▪ Sanitary wares- Sl. No. 22 of Orange Category ▪ Refractories- Sl. No. 22 of Orange Category **Bulk Drug & Pharmaceuticals, Chemicals (MSME)** ▪ Pharmaceutical formulation and for R & D purpose- Sl. No. 74 of Orange Category ▪ Bulk Drug & Pharmaceuticals- Sl. No. 58 of Red Category ▪ Basic Organic Chemicals/Synthetic Organic Chemicals and chemical intermediates- Sl. No. 22, 25 of Red Category **Auto-components (proposed for Future Expansion)** ▪ Auto component accessories- Sl. No. 2 of Red category
Infrastructure Proposed	**Infrastructure proposed for Industrial Park include the following:** ▪ DG set ▪ CESTP ▪ Water supply system ▪ Power supply system ▪ Solid waste management (Collection, Segregation, Storage only) ▪ Pipeline Gas facility
Estimated Cost of the Project	**424.55 Crores**

1.2.1 Area Statement & Land Use

The proposed project shall comprise the following components as detailed in **Table 1.2 and Table 1.3** below.

Table 1.2: Area Statement for Entire Project Site Area

Sl. No	Locations	Area in acres	Percentage (%)
Processing Area	METALLIC AND NON-METALLIC	155.85	15.623
	FUTURE EXPANSION (AUTO-COMPONENT ACCESSORIES)	232.45	23.301
	BULK DRUG & PHARMACEUTICALS, CHEMICALS	28.10	2.817
	FOOD AND AGRO	42.10	4.220
Non-Processing	UTILITIES	14.89	1.493
	PARKING SPACES	107.14	10.740
	COMMON AMENITIES	30.93	3.100
Greens	GREEN BELT -15M ALONG SITE	12.16	1.219
	GREEN BELT ALONG WATER	24.35	2.441
	ORGANIZED GREEN	105.35	10.560
Waterbody	EXISTING WATERBODY	59.16	5.930
Roads	ROADS	185.11	18.556
		997.59	**100%**

Table 1.3: Proposed Green area within Industrial Park

Greens	Area in acres
15 m width Greenbelt Around periphery	12.16
Open Green Space proposed for landscape gardening	105.35
Greenbelt around water body	24.35
Open space to be kept for greenbelt development within industrial plots	183.40
Greenbelt at both side of the approach roads and median of road	7.58
Total Greens	332.84 (33.36%)

Sizes of the industrial plots has been designed according the need and market assessment of the different industrial clusters and its activity envisaged. In initial developmental industrial plots proposed, these has been mainly designated for MSME facilities and for future expansion area, medium and large sized industries have been envisaged for setup their manufacturing units, thus plot sizes have been increases accordingly. The detailed plot wise size description has been provided in **Table 1.4**.

Table 1.4: Details of Plot size for Mega Industrial Park

Plot No.	Plot Size (Acres)	BUA (Acres)	Sector
114 to 151	2.00	0.8	**Metallic/ Non-Metallic; Food & Agro; Bulk Drug, Pharmaceuticals, Chemicals;**
178 to 193	2.14	0.86	
202 to 206	2.36	0.94	
207 to 211	2.26	0.90	
212 to 216	2.21	0.88	
217 to 221	2.17	0.87	
1	6.71	2.68	**Future Expansion (Auto-component accessories)**
2	2.49	0.997	
3	5.46	2.18	
4	7.21	2.88	
5	10.54	4.21	
6	16.11	6.44	
7	14.09	5.64	
8	13.38	5.35	
9	10.88	4.35	
10	8.05	3.22	
11	4.97	1.99	
12 TO 14	6.24	2.50	
15	7.18	2.87	
16 TO 20	5.09	2.04	

1.2.2 Common Facilities / Industrial Infrastructure facilities

Amenities and Facilities are the most important supporting land use for proper functioning of Mega Industrial Park infrastructure. The infrastructure provided in the park holds the key to its functional viability. An area of 30.93 acres and 14.89 acres has been marked for amenities and utilities, respectively. Amenity area will accompany by commercial market complexes, exhibition centers, reception area, Drinking Water facility, public Toilets, Canteens, ITI facility etc. The following common utilities are proposed in the Mega Industrial Park.

a) DG set and other utilities (Common Boilers & Cooling Towers), HSD storage area
b) Power supply system
c) Water supply system
d) Common Effluent Sewage Treatment Plants (CESTP's)

e) Solid Waste Management Facility (Collection, Segregation & Storage)
f) Gas pipeline
g) Fire Hydrant system

1.2.3 Manpower Requirement

Total human resource proposed for site is 68,319. The direct operational employment generation proposed as 62,291 and human resources required for ancillary work has been proposed as 6,028.

1.2.4 Parking Requirement

An area of 107.14 acres has been marked for parking facilities.

1.2.5 Water Requirement & Waste Water Management

Water requirement during the construction phase shall be 100 KLD, which will be used for construction mess domestic use as well for development of Infrastructure facilities like roads, Office buildings, storm water drains, water tanks, and construction of Common Effluent & Sewage Treatment facility (CESTP) etc. Domestic effluent generating from construction mess will be treated in septic tank and soak-pit facility. During Operation Phase, the estimated raw water requirement is 6.7 MLD and this will be sourced from Somasila Reservoir which is around ~48.29 Km (ESE). Estimated effluent generation during operation phase is 4.0 MLD. Effluent will be treated in CESTP and reused for greenbelt development and cooling tower makeup water. The capacity of the CESTP has been proposed as 5 MLD.

1.2.6 Power Requirement

The estimated peak power demand for the industrial park operation is about 68.48 MVA. The required power demand will be fulfilled from power source from 220 KV power grid substation, in Chinnakampalle, Kadapa, 22km from site. The power sourcing/ availability application letter has been submitted to concerned office and same is under process for power assurance. Further, power would be tapped from supply grid to 132/33 KV Sub-station, situated towards North-western boundary of the proposed project site.

1.2.7 Solid Waste Management

The Solid waste generation estimated for the proposed industrial park project has been provided below in **Table 1.5**. During construction phase there will be generation of construction debris and top soil. This waste will be reused in area leveling process. Solid Waste from Construction mess will be transferred to local municipal waste management facility. During operation phase, Solid Waste shall be collected, segregated and stored within the impervious and covered Waste Management shed and shall be disposed to TSDF/authorized recycler. Considering the close proximity of Kadapa Airport, no TSDF or in-house waste management has been proposed for the project.

Table 1.5: Solid Waste Management Plan

Waste Generating Facility	Acres	Ton/Day
FOOD AGRO - LARGE	42.10	0.30
METALLIC AND NON-METALLIC	155.85	0.55
FUTURE EXPANSION (AUTO-COMPONENT ACCESSORIES)	232.45	8.37
BULK DRUG & PHARMACEUTICALS, CHEMICALS	28.10	1.01
UTILITIES	14.89	0.00
PARKING SPACES	107.14	2.08
COMMON AMENITIES	30.93	0.00
GREEN BELT -15M ALONG SITE	12.16	0.18
GREEN BELT ALONG WATER	24.35	0.37

ORGANIZED GREEN	105.35	1.58
EXISTING WATERBODY	59.16	0.00
ROADS	185.11	0.00
TOTAL	**997.59**	**14.44**

1.3 Description of Environment

For assessment of existing environmental condition of the project area, baseline environmental monitoring study was conducted during Pre-monsoon season (March-May, 2021) at the proposed project site and its project study area (identified 10 km surrounding of the project site). The study data revealed that the proposed project study area has very less quantum of pollution load and the area is devoid of any critically polluted area/source. The parameter-wise description of baseline environmental condition is described in following **Table 1.6.**

Table 1.6: Baseline status

Environmental attributes	Baseline status
Land use	The project study area has dominant land use pattern of cultivable lands having percentage ratio of 78%, followed by non-cultivable barren/scrub lands (15%). However, the land identified for the proposed project has dominant land use of non-cultivable barren/scrub lands.
Ambient Air & Noise Quality	The particulate matter concentration in the study area varies from 54-56 µg /m^3 for PM_{10} and 21.8-24.5 µg /m3 for $PM_{2.5}$. Gaseous pollutants (SO_2, NO_2, O_3, CO) and other toxic substances' concentration also found low and well below the stipulated standard limit prescribed by NAAQS, 2009. Ambient Noise level of the area varies between 54-56 dB(A) during Day Time and 42-45 dB(A) during Night Time. In consideration of overall ambient noise level of the area, it is found that the area has moderate noise generation from external and secondary sources. Noise level near to the institutional areas around the project site found slightly higher than prescribed limit, it might be due to the noise generation due to the human activities at the institutions.
Surface Water Quality	The baseline monitoring of surface water quality has been assessed from Penna River and Papagni River upstream and downstream sources and also tested from different canals flowing within the project study area. Sampling and analysis was also conducted from largest stagnant fresh water reservoir of the area – Devuni Kadapa lake. The results were compared with the drinking water quality standard (IS: 10500-2012) reference values and also in respect of CPCB Water Quality Criteria for designated best use. The pH values of all analyzed samples ranged between 6.78 to 7.86 and were within the acceptable limit (6.5-8.5). The TDS levels ranged from 149.0 to 347.0 mg/l and the chlorides level in surface water samples ranged from 54.8 to 196.2 mg/l and were found below the acceptable limit of 250 mg/l. The sulphates level ranged from 18.7 to 57.2 mg/l and were below the desirable limit of 200 mg/l. The fluorides level ranged below the acceptable limit of 1.0 mg/l. The nitrate level ranged between 1.6 to 7.2 mg/l and was within the desirable limit of 20 mg/l. The BOD values ranged between 3.1 to 6.4 mg/l and COD values ranged between 22.4 mg/l to 64.6. The values were within the CPCB criteria for Class C water for designated best use of drinking Water Source after proper conventional treatment followed by disinfection.

Environmental attributes	Baseline status
Ground Water Quality	Baseline monitoring for ground water quality of the project study area has been assessed from 10 locations, mainly from tube well/ dug well of different villages within the project study area. The analysis results indicate that the pH ranges between 7.37 to 7.61, which are well within the specified standard of 6.5 to 8.5 limits. Total hardness of the ground water was recorded with a range between 244.8 to 312.1 mg/l. Total Dissolved Solids (TDS) concentration were found between 248 to 350.4 mg/l. Chlorides at all the locations were found within the desirable limits (250 mg/l) as it ranged between 107.5 – 166.4 mg/l. Sulphates at all the locations were within the permissible limits (200 mg/l) as it ranged between 25.8 – 55.4 mg/l. Fluorides recorded below detectable limit; Nitrates concentration were found between 5.78 to 7.88 mg/l. The concentration of Magnesium found in groundwater samples of the study area with a range from 28.4 to 41.5 mg/l. Bacteriological studies reveal that no coliform bacterial are present in the sampled ground water. No heavy metal contamination observed in the ground water sampled and analyzed in the study area. Considering the analysis made for ground water environment of the area, it is identified that the ground water of the area is drinkable with conventional pre-treatment.
Soil Quality	To assess the soil quality of the area, 10 samples were collected from different agricultural as well non-agricultural field within the project study area. The most commonly observed soil textures are sandy loam. The soil pH ranges between 7.41 to 8.43, thereby indicating the soils are slightly alkaline. The organic carbon content of soil varied from 0.4% to 1.14%. Available nitrogen content in the surface soils ranges between 88.5 to 263.23 mg/kg. Available phosphorus content ranges between 36.31 to 71.28 kg/ha. Potassium content in the soil ranges between 56.62 to 379.31 kg/ha. Thus, it has been identified that the project study area has richness of nutrients for cultivation use. However, soil at project site having low to moderate nitrogen and potassium concentration in respect to the other surrounding areas.
Biological Environment	During baseline (primary + secondary) terrestrial ecological study, 133 plant species, 32 shrub species and 13 herb species identified within the study area. No endangered species was found and most of the species are endemic to the bio-climatic zone of the region. The proposed project site has devoid of major plantation or dense tree cover area, and most the area proposed for the project site has grazing land having small shrub and herbaceous plantations. During faunal study, 8 major faunal species reported from the project study area. No scheduled I species has been identified within the project study area.
Socio-Economy	The total population of the district is 28,82,469 persons with approximately 66 percent of population residing in rural areas. With a total area of 15,359 square kilometers, the district ranks 7th in terms of area, comprising approximately 5.58 percent of the state. The communities residing in the project surrounding area are aware about the project and supported the project. Land available at the site are mainly used as grazing land for livestock of surrounding habitation areas. Thus, during consultation for primary socio-economic survey, queries were also raised on allocation of alternate grazing land for the livestock. Suggestions was raised for placing noise generating industries far from habitations. The community also requested on providing employment opportunities to the household providing land to the project in addition to proposing certain village development activities such as proper drainage and roads in the village to accommodate the influx of people from areas exterior to the village, safe drinking water supply, primary schools for children within the village and others for providing safe and healthy

Environmental attributes	Baseline status
	environment for the community to stay in the villages post initiation of the project. The detailed queries and comments will be noted during Public Hearing process and revised management plan will be provided to address the socio-economic development of the area.

1.4 Anticipated Environmental Impacts & its Mitigation Measures

1.4.1 Land Environment

The development of industrial park will change the land use from existing uncultivable barren land to industrial use. During construction phase, area clearance and area leveling process will generate top soil waste, which will be mix of bio-degradable waste and soil debris. During further construction work, there will be anticipated generation of construction wastes, these waste materials shall not have any hazardous nature and will be used in area leveling and road construction work. With development of 33% green cover within the industrial park, the impacts of change in land use shall be minimized with maximum possible extent.

During Operation phase, the controlled and systematic operation of industrial park, proper storage of waste material and development of green belt and its maintenance will mitigate the impacts on soil and land cover. In addition, during operation phase, no change in land use has been identified or anticipated, thus, mitigation measures to control top soil degradation and soil contamination will be the main focus for protecting the land environment of the area.

1.4.2 Impacts on Climate

Wind Speed

The wind speed in any area is dependent upon local geographic and topography formation of high and low-pressure zones. No adverse impact on the wind speed is anticipated due to the project activities. The predominant wind direction would be same, i.e., from East to west direction.

Temperature

The pollutants in air have adverse impact on human's health, result in commonly respiratory problems. Development of vegetation cover in the surrounding area will help maintaining the temperature in the long - run. The temperature pattern is a regional behaviour and is not likely to be affected by the project activity.

Rainfall

The trend of rainfall follows a regional pattern and is mainly governed by the southwest & northeast monsoon. The area mainly rained with south-west monsoon rainfall. The project activity, therefore, is not likely to have any adverse impacts on rainfall patterns, as the project activity will limited to very small micro-climate area, thus the project activity would not impact on existing rainfall distribution pattern.

Humidity

The pattern of relative humidity depends mainly on the rainfall, wind, temperature and other weather phenomenon. Proposed industrial park operation will not impact on climatic phenomenon adversely, thus the project does not have any direct impact on humidity of the area.

1.4.3 Impacts on Air Environment

The construction phase will involve movement of construction materials to the project area, site clearing, vehicular emissions, and emissions from the construction machinery, etc. This in turn could influence the ambient air quality in the region through increase of particulate matters and gaseous pollutants in the ambient air. The increment of pollutants in the ambient air during the construction phase is temporary in nature and will be localized. Dust pollution, though temporary, is most likely to affect the well-being of the construction workers and residents of surrounding villages located in close proximity to the project site and towards downwind direction. Nevertheless, the following mitigation measures will be adopted:

- Equipment and vehicles will be regularly maintained in accordance with the manufacturer's recommendations to maximize fuel efficiency and help minimize emissions and also fuel that has low sulphur content of 0.1% would be utilized.
- A stringent speed limit of 30 km/hr. will be enforced for internal vehicle movement.
- Vehicles transporting soil and aggregate to be covered using tarpaulins or covers that prevent the escape of dust, and restricting such vehicles from stopping near settlements.
- Fixing of tailgates and their proper closing at the back of trucks that would be used in transportation of construction and building materials.
- Construction materials will most likely be transported during off-peak hours.
- Use of windbreaks, netting screens or semi-permeable fences to reduce dust emissions from working areas close to sensitive residential or agricultural locations or natural habitats.
- In order to ameliorate the fugitive dust suppression, the surfaces near the proposed site and transport roads will be sprinkled with water to reduce dust generation.
- Plantation of dust absorbing plant saplings along the periphery of the project site and maintain the plants for their fast growth.

During operation phase, due to operation of industrial units, point source emission of particulate matter and gaseous pollutants will be taken place; in addition to this, due to vehicular movements pollutants will be added into the ambient air. To control and reduce the air pollution impact on surrounding habitations and sensitive places like institutions, master planning of industrial park has been made such a manner that point source emitting and polluting industries has been placed towards the upwind direction with respect to annual wind rose direction. In addition, to mitigate and control the industrial pollution, Air Pollution Control Devices (APCD), Continuous Ambient Air Quality Monitoring Stations (CAAQMS), use of low emission fuels (like PNG), maintenance of equipment and development of peripheral green belt/roadside plantation has been proposed.

1.4.4 Impact due to Noise & Vibrations

The construction and industrial operation work will lead to significant deterioration of the noise environment within the project site, the adjoining and neighboring areas. Especially, some of the village habitations have close proximity from the site (*viz*., Ambavaram, Tadigotla, Kopparthy, Ramapathadu villages having distance 1-3 km from the site); Some of the institutions also having close proximity to the proposed project site. Thus, during construction and operation phase the industrial park environmental monitoring team as well individual industry will strictly adhere the following mitigation measures. The following control measures will be adopted at the points near to the source of noise to keep the ambient noise levels below permissible limits 75 dB(A) during Day Time and 70 dB(A) during Night Time.

- Substitution of major noise generating DG sets and use of Green DG sets with Acoustic Enclosures.
- Provision and maintenance of 3 stages thick tree belts to screen noise from source, followed by landscape green buffer area, where no addition or increment of ambient noise and followed by

peripheral 3 layered thick green cover to attenuate the noise level within prescribed limit.

- Avenue plantation within the project area to lower down the ambient noise due to vehicular movement.
- Installation of acoustic enclosure for the major noise generating equipment and DG sets.
- Regular maintenance of equipment and in-house vehicles; monitoring of ambient noise level within the project site and around the site.
- Provision of protective devices like earmuffs/ear plugs to those workers who cannot be isolated from the source of noise. Provision of Health checkup camps for employees and surrounding habitation areas.

1.4.5 Impact on Water Environment

During construction phase, waste water will be generated from construction mess and same will be treated in septic tank followed by sock pit facility. It will be monitored that construction debris and other waste generating from construction work, should be kept in a dedicated area away from the natural drainage system/water body within the project site.

During Operation phase, domestic effluent will be generated from the industrial facility as well from other domestic use. Trade effluent will be generated from individual industries and same will be primarily treated in in-house ETPs for Food processing, pharmaceuticals and metallurgical units and primary treated effluent will be transferred through effluent drainage system of the park and will be treated along with domestic effluent in Common Effluent & Sewage Treatment Plant (CESTP). The estimated capacity of CESTP is 5 MLD and it has been proposed towards the downstream flow the drainage slope available at the area.

Rainwater generating within the site will be captured through rooftop rainwater harvesting system and estimated annual rooftop runoff is 518,529.63 m^3, which will be captured and harvested to the ground water table of the area. No effluent and surface runoff mixing will be occurred, as separate drainage will be provided for both type of water flow. In addition to the this, following management measures will be taken care off to protect the water environment of the area:

- Optimization, Reuse and recycling methods shall be adopted at all industry level. Recycled water pipeline will be connected to the greenbelt area and cooling tower area, so that recycled water will be reused in those non-potable use.
- Strategic plans such as implementing following structures for rainwater harvesting and ground water recharging purposes in project site.
- Roof-top rain water harvesting
- Channelization of run-off water through a settling basin, especially during construction phase.
- Recharge pits, Rainwater storage ponds/tanks/ or use of existing pond/tank Monitoring of water quality and ground water level variations in and around the project site.
- No washing of vehicles or any other machinery/equipment related to construction will be done in the local water bodies.

1.4.6 Impact on Biological Environment

Impacts on Flora

The project area is a non-cultivable land so there would not be any significant impact on the flora. The land is inhabited and major part of the project area is open/barren land. Existing shrubs and herbs cover will be cleared. However, 15 meter thick 3 layered peripheral green cover, avenue plantation and landscape green covers has been proposed for the project and same will be developed and maintained within the industrial park. Plants species has been proposed as local area specific indigenous plants of Semi-arid climate zone and vegetation zone of the area, which is Southern Plateau and Hills.

Impacts on Fauna

There is no wildlife sanctuary, biosphere reserve or any ecological sensitive zone identified within the 10 km radius of the project site, so there won't be any significant impact on the fauna. The peripheral green cover will have fruit bearing and blossoming trees, which will attract local avifaunal species, thus the area may work as very good green buffer from the industrial park to the surrounding habitation areas. No untreated effluent will be discharged to the existing surface water body of the area, thus the project will not any significant impact on aquatic faunal diversity of the area.

1.4.7 Impact on Socio-Economic Environment

The proposed project will improve the overall socio-economic condition of the area. The improved connectivity and bridge development between demand and supply will facilitate the region with better financial development. The job generation proposed for the project is about 68,319. The direct operational employment generation proposed as 62,291 and human resources required for ancillary work has been proposed as 6,028.

During socio-economic survey, it has been identified that, in some places of the un-cultivable land of the proposed project site and surrounding, grazing activity is carried out by surrounding villagers. Thus, villagers requested about support towards identification of alternate grazing area for their livestock and also requested for overall development of the area. Majority of the land with possession of APIIC and land has been acquired under the provision of Govt. Order Ms. no. 54 dated 13.02.2019 and as according the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act, 2013, and Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement (Andhra Pradesh Amendment) Act, 2018. The proposed project will facilitate following long term positive impacts at the project area:

- Skill development and Training to the local population
- Localizing the global/domestic value chain
- Foreign Direct Investment
- Improved working condition
- Shifting of manpower resources from low productivity to high productive activities
- Augmentation of existing clusters
- Diversifying the local industrial base
- Shifting activities from unorganized to organized sector
- Project development will also attract hotel business, banking sector, small eateries, construction, transport and other supply services
- Improved connectivity
- Increase in Per Capita Income

1.5 Analysis of Alternative Sites

The main purpose of the siting process is to make the best use of the land resources available. The site selection for setting up the Industrial Estate requires the synthesis of two distinct selection procedures, viz. a technical screening process based upon economic, engineering and environmental suitability, and public approval process. There were 2 alternative sites identified during project screening stage:

a) Site at Kopparthy and adjacent villages having area of 997 acres.

b) The other Alternative site had been identified as Rachinayapalli village having area around 1000 acres.

After detailed alternative site analysis study conducted for both identified sites, Kopparthy site identified in YSR Kadapa district has been identified as best feasible alternative for development of industrial township; as the Rachinayapalli alternative site has very close proximity of Eco-sensitive zone and Penna River, thus housing micro and mega industries close to the eco-sensitive area is not feasible.

1.6 Environmental Monitoring Program

The overall impact assessment of the proposed project was carried out and monitoring plans have been framed based on the severity of impacts in different areas. During the EIA study it has been observed that the air and noise quality may be affected and temporary changes in these parameters are expected. The preventive/ curative measures to reduce the ill effects of construction activities on these parameters have been suggested under various plans. The total cost of environment monitoring plan would be Rs. 2,304,500.00/year during construction phase and 514,500.00/year during operation phase.

1.7 Additional Studies

1.7.1 Risk Assessment

The risks associated with the project are hazardous, if adequate controls or safety systems are not adopted. During construction phase drilling, deploying excavators/earthmovers and loading/ unloading of trucks can have risks of accidents if human failure or errors are not taken care of. The accidents, if any, may not be fatal, but are potential to cause lost time or severe injuries. Thus, the need for adequate safety at work places is required. Besides minor incidents like exhaustion, sunstrokes, or other health related incidents may take place, which can be avoided with adequate safety regulations and measures.

- Firefighting and first –aid provisions in the project office/complex and project area and ensuring periodic checking of worthiness of firefighting and first aid provision.
- Training and refresher courses for all the employees working in hazardous points. All employees shall have to undergo the training at a regular interval.
- As a part of disaster management plan, a rescue team will be formed by imparting specialized training to select project staff.

1.7.2 Resource Conservation

Water Resources: Water supply demand is estimated based on the proposed land use, built-up area and the population densities proposed in the master plan. The estimated water demand is segregated into potable and non-potable water demand. The recycled water shall be reused in non-potable use of gardening, cooling tower makeup water, washing use.

Construction materials: As a large Industrial Estate, the project will require various kinds of natural construction materials such as sand, gravel etc. It is proposed for prior estimation of required quantities of these materials and procurement only as per requirement. This will also result in cost-efficiency. Excavated soil from the project site will be used within the site to the extent feasible. Excess soil will be made available to the construction sites, as per need.

Energy: To conserve the energy resources, good practices will be followed during the operation phase such as turning off lights and equipment when not in use, ensuring fuel efficiency of motors and vehicles through proper maintenance and minimal work at night. The principles of energy conservation will also be embedded in the buildings through use of energy efficient fixtures, maximum availability of natural light and use of solar energy for street and common area lighting facility.

1.7.3 Socio-Economic Study

The communities residing in the project affected area were aware about the project and supported the project. However, certain concerns and issues regarding compensation for land, livelihood and overall quality of life were raised by the community during the discussion. However, majority of the land with possession of APIIC and land has been acquired under the provision of Govt. Order Ms. no. 54 dated 13.02.2019 and as according the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act, 2013, and Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement (Andhra Pradesh Amendment) Act, 2018.

With the villages being closer to the project area, the issue of pollution primarily, water, air and noise were also conveyed during the discussions. Water tanks present inside the project area shall continue to serve as source of irrigation for crops in the nearby area. Pollution in the said source shall affect the livelihood and health of the community. The community requested on use of proper waste disposal techniques for the pharmaceutical companies coming up within the project as they are known to pose health risks.

The issue of noise pollution was also raised with suggestion of placing such industries far from habitations. The community also requested on providing employment opportunities to every household forfeiting land to the project in addition to proposing certain village development activities such as proper drainage and roads in the village to accommodate the influx of people from areas exterior to the village, safe drinking water supply, primary schools for children within the village and others for providing safe and healthy environment for the community to stay in the villages post initiation of the project. During Public Hearing, issues queries raised by stakeholders will be addressed and proper mitigation plan and budget will be allocated.

1.8 Project Benefits

Some of the expected benefits are:

- Better quality of educational and medical facilities to the local people
- Newer Income generation resources
- Human Resource to increase from low productive activities to high productive activities
- Existing industries to gain benefit for better demand-supply arrangement
- Improved working condition & State of the art infrastructure for work
- Shifting activities from unorganized to organized sector
- Convergence of population and thereby enhanced local consumption and spending
- Project development will also attract hotel business, banking sector, small eateries, construction, transport and other supply services
- Sustainable development
- Shifting of manpower resources from low productivity to high productive activities
- Augmentation of existing clusters Skill development and enhancement and Training to the local population
- Localizing the global/domestic value chain
- Technology transfer
- Foreign Direct Investment
- Diversifying the local industrial base

1.9 Environment Management Plan

Environment Management Plan for the project is the result of impact assessment study. It has been designed against the predicted impacts and in-line with mitigation measures proposed. Proposed industrial park will be facilitated with Air and Noise pollution control facilities, CESTP, collection and storage of solid and hazardous waste, Fire Fighting facility, online monitoring system and periodic regular environmental

monitoring facility, health checkup facility. The summary of cost estimate of various environment management plans as contained in the Draft EIA report is enumerated below in **Table 1.7** and **Table 1.8**.

Table 1.7: Summary of Total Cost Estimate for Construction Phase

Sl. No.	Plans	Capital Cost (Rs lakh)	Recurring Cost (Rs lakh)
1.	Environmental Monitoring	0.00	23.05
2.	Dust Suppression Measure	0.00	14.30
3.	Solid Waste Management (collection and transportation of Waste)	0.0	1.60
4.	Greenbelt Development in Periphery, Water-rim, Roadside area @1.84 lakhs/Ha.	66.24	0.00
5.	Waste Water Management (installation of STP)	40.00	0.00
6.	Operation of STP	0.0	6.00
7.	OHS Management (distribution of PPE)	30.00	0.00
8.	OHS management (Health Checkup)	0.00	30.00
Grand Total		**136.24 or 136 lakhs**	**74.945 or 75 Lakhs**

Table 1.8: Summary of Total Cost Estimate for Operation Phase

Sl. No.	Plans	Capital Cost (Rs lakh)	Recurring Cost (Rs lakh)
1.	Environmental Monitoring	0.00	5.15
2.	Installation of online AAQMS stations	30.00	0.00
3.	Installation of DG Set stack & DOCC	72.25	0.00
4.	Installation of online stack monitoring stations	35.00	0.00
5.	Installation of Meteorological station	1.50	0.00
6.	Solid Waste Management	188.50	0.50
7.	Installation & Operation of CETP	9.00	6.00
8.	Installation & operation of Water Treatment Plant	45.00	3.00
9.	Greenbelt Development and maintenance @1.84 lakhs/Ha. in Open green area	93.84	375.36
10.	OHS management & installation of Fire Hydrant system	205.00	5.00
10.	Local Area Development Plan	90.00	0.00
10.	Health Management	30.00	0.00
Grand Total		**800.09 or say 800.00 lakhs**	**395.00 lakhs**

The estimated capital EMP cost for operation phase of the proposed project is 800 lakhs or 8 Crores, which is approximately 1.9% of proposed project cost. The recurring EMP cost for the proposed project is estimated as 395 lakhs or 3.95 crores. During construction, capital EMP cost is estimated as 136 lakhs and recurring EMP cost is proposed 75 lakhs. The cost estimation is tentative and assessed according the Impact identified for the project and EMP suggested.

1.10 Conclusion

The Environmental Impact Assessment study was conducted as according the TOR issued by SEIAA, AP on

26.02.2020 and 27.09.2021 for proposed development of industrial park in Kopparthy. During the EIA study, to arrive at the proposed suitable location, 2 alternative sites were studied. After studying the 2 locations, technical consultant has concluded that the alternative 1 site at Kopparthy and adjacent villages as best suitable location for the development of the industrial park.

The cost of the project is estimated to be INR 424.55 crores for the development of Industrial Park. The proposed project will have positive impact on social and economic improvement of the region by overall improvement in living standard through creation of about 62,291 of new direct and 6,028 ancillary job opportunities, increase in volume of manufacturing, general trade, general improvement in infrastructural facility with better transport,

In Addition, the proposed project will have following Environmental and Social benefits which would lead the project for a sustainable operation. Industrial Park development is a permitted activity as per Sector 7(c) of EIA Notification 2006 and its amendments thereof.

- No eco-sensitive zones have been identified within the 10 km area study area of the proposed project site.
- No endemic and endangered species of flora and fauna reported within 10 km of the project site during reconnaissance survey. Detailed ecological study will be conducted during EIA and Baseline study.
- No Historical or Cultural Heritage Site or Ecologically sensitive area found within 10 km radius of the proposed development of Industrial Park.

As per the EIA-EMP study, the proposed project is found to be viable from all aspects such as technical, economic, environmental and social aspects.

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