

Pre – Feasibility Report

of

*Industrial Park at Orvakal, Orvakal Mandal,
Kurnool District, Andhra Pradesh*

By

*Andhra Pradesh Industrial Infrastructure Corporation Limited
(APIIC)*

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1.Executive Summary

With the globalization of economies, constant change is observed in the status of economies of various countries. In order to withstand the pressure on global economies with respect to production, investment and business, industrial parks have been identified, which are expected to create sustainable economic progress. In this perspective, India has become one of the most attractive destinations for investments in the manufacturing sector. Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC), known for creating landmark infrastructure projects has come up with the proposal to create an industrial park, in an area of 4640.11 Ac (1877.79 Ha) located amidst villages of Orvakal mandal, namely, Orvakal, Uppalapadu, Guttapadu, Meedivemula and N. Konthalapadu, of Kurnool district.

The main objectives of the proposed project include:

- To make Kurnool district, a renowned manufacturing hub and invite companies to investment
- To manufacture goods in India and sell them not only in domestic markets but also worldwide
- To enhance the manufacturing facilities and employability in and around the Kurnool district
- To attract investments
- To generate economic activity within neighboring regions
- To improve investment in other related sectors, like transportation, energy, telecommunication etc.
- To achieve regional development based on economic growth and thus poverty reduction
- To enhance the socio-economic status of nearby habitants by generation of employment and creation of supporting infrastructure

Table 1 Features of the project

Project name	Industrial Park at Orvakal, Orvakal Mandal, Kurnool District, Andhra Pradesh by Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC)
Land area	4640.11 acres (1877.79 Ha)
Survey numbers	Attached in Annexure I
Land coordinates	15°40'42.24"N, 78° 8'12.71"E; 15°40'24.53"N, 78° 9'48.24"E; 15°38'54.83"N, 78° 8'41.97"E, 15°37'0.50"N, 78° 8'53.92"E; 15°38'38.74"N, 78° 6'1.36"E; 15°39'37.80"N, 78° 7'13.54"E
Nearest Town	Orvakal, 1.7 Km (NNE)
Nearest railway station	Kurnool Railway station 20 Km (NNW)
Nearest city	Kurnool, 20 Km (NNW)
Water supply	From nearby Srisailam foreshore HNSS left station zero at Muchumarri village
Type of industries proposed	Steel based industry, light engineering, non-metallic minerals, Aerospace and defense hardware, e-waste, gems & jewelry, inorganic chemicals, logistic hubs, renewable energy, textile & apparel, etc.
Category of project	Category A, S. No. 7 (c) Industrial Estates/ Parks/ Complexes/ areas, Export Processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes.
Infrastructure proposed	Internal & external roads, internal water supply, power supply, CETP, STP, Rainwater harvesting system, storm drains, sewer lines, greenbelt, common utilities and other related infrastructure.
Project cost	Rs. 525 Crores

2. Introduction of the Project

2.1 Identification of project and project proponent

2.1.1 Identification of project

Manufacturing sector has been acknowledged as a potential growth sectors in Indian industrial development context. According to data and forecast report from International monetary fund, India is projected to overtake British manufacturing sector to attain fifth largest global manufacturing economy in the world by the end of year 2020. The Government of India has also launched “Make in India” program as an initiation to epitomize Indian manufacturing sector on the global platform.

Following the Government of India’s, initiatives as “Make in India” “skill India”, Government of Andhra Pradesh too had set up its “Vision 2029” to capitalize states friendly business policies and tap in strategic development opportunities. Thus the APIIC, the official nodal agency in AP for promoting industrial activities & development of industrial infrastructure; proposed to establish Orvakal Mega Industrial Hub (OMIH), which connects two major industrial corridors, the Chennai -Bangalore Industrial Corridor (CBIC) and Vishakhapatnam – Chennai Industrial Corridor (VCIC). The OMIH constitutes of six industrial clusters of which, Orvakal Industrial cluster has been proposed for initial development with the aim to provide impetus growth for small and medium scale industries in value chain and other support infrastructure for accelerating growth of industries in the region.

2.1.2 Project proponent

The proposed project will be established and operated by the Govt. of Andhra Pradesh, along with APIIC, which holds the respect of developing around 320 Industrial Parks spread over an extent of 1,30,000 acres. These include IT parks, Bio-Tech parks, SEZs etc., providing Industrial infrastructure. The Corporation is also developing sector-focused parks like edible oil units, automobile parks, textile processing parks, leather parks in the state of Andhra Pradesh.

2.2 Brief description of nature of the project

The Orvakal industrial cluster is a significant part of industrial development programme of AP Govt. The proposed project intents to utilize untapped human and nature resources while enhancing sustainable industry and trade development of the region. The land area of **4640.11** acres, spread across Orvakal, Guttapadu, Uppalapadu, Medivemula and N. Konthalapadu mandals of the district.is proposed to house small, medium and large scale industries, which include steel based, Light Engineering, Non-metallic mineral, Aerospace & defense hardware, E-waste recyclers, Gems & Jewelers, inorganic chemical, Logistic hub, Renewable energy, textile & apparel industries. The site is in close proximity (aerially about 1.7 km) from Orvakal town and the nearest railway station is in Kurnool town (20 Km), which is also the district headquarters. Conceding the significance of the Orvakal cluster, Govt. of AP proposed a railway siding track

across the Orvakal industrial park and to create a platform intended for easy transport of raw material and products.

2.3 Need for the project and its importance to the country and region

India is projected to attain significant demographic growth coupled with disproportionate rise in working age population. To support the work force population, manufacturing sector requires generating employment to its full potential. Also, the strategy of multinational companies to diversify their products and setup their manufacturing plants at various places provides ample opportunities to Indian economy to attract international investments in manufacturing or service sectors.

In optimistic economic developmental situations manufacturing sector in India is projected to grow six fold by 2025 while creating up to 90 million domestic jobs. Congruently Govt. of AP has initiated “Vision 2029” with an aim of attaining the status of “Developed state’ by 2029 and ascertained Industrial sector as priority area for its vision. Ministering healthy environment in manufacturing development in the state, Govt. of AP has initiated “Orvakal Mega Industrial Hub” in Kurnool district. The proposed location comprises of two economic corridors of the country, CBIC & VCIC, making it a strategic location for rapid industrial and infrastructure development. Also, the existing infrastructure facilities and initiation of new projects near to the project like expressway etc. are conducive for industrial growth in the region. The industrial park has been proposed to hold the industries based on the domestic and international market demand.

The reasons for establishing the proposed project include:

- To improve industrial infrastructure facilities in Kurnool district
- To meet the demand – supply gap for various raw and processed material in domestic and international markets
- To channelize the skilled manpower at short distances into productive employment
- To utilize the infrastructure and natural resources available in the district for revenue generation in best possible way with minimum loss to the environment
- To build economies targeting socio-economic and environment benefits with sustainable development.

2.4 Demand-supply gap

Advanced technologies coupled with increased income levels of household modified the consumption pattern of the society, driving them from basic need to much more sophisticated life style filled with a variety of goods and services. Production of such goods is a prime factor driving an economic development. However, acute capital deficiency is the central problem of Indian economy. While by utilizing internal and external economies, industry can get higher profit, and these profits can be reinvested for further expansion and development. So, industrialization helps in capital formation subsequently, economic development of the region.

2.5 Imports vs. indigenous production

Andhra Pradesh government envisions developing Kurnool as a hub for various small, medium and large scale industries, as mentioned in earlier sections. According to the Industries Mission Document, the state government plans to promote raw materials based on the type of industry in the region.

2.6 Export possibility

Economic growth of a nation is greatly influenced through its export possibility since it increases foreign exchange reserves in the country thereby increasing economic status of a nation. The proposed project has a potential towards exports of a few products.

2.7 Domestic / export markets

The products manufactured in the proposed unit are expected to meet the demand-supply gap in both domestic and export markets.

2.8 Employment generation (direct and indirect) due to the project

Establishment of any industry requires human capital and Kurnool district holds extensive human resources. The proposed project has the potential to generate employment to both skilled and unskilled labor from surrounding locations. Also proposed electronic machinery industry within the Orvakal cluster might require special skilled labor instigating need for potentially skilled labor from other locations as well.

3. Project Description

3.1 Type of project including interlinked and independent projects, if any

The proposed project is aimed at development of Industrial Park with common infrastructure facilities. There are no interlinked and independent projects for the proposed project.

3.2 Location (map showing general location, specific location, project boundary and project site layout) with coordinates

The site for the proposed project-Orvakal industrial park is located within Orvakal Mega Industrial hub, Kurnool district of Andhra Pradesh. The site is spread between Orvakal, Uppalapadu, Guttapadu, Meedivemula, N.Konthalapadu, villages of Orvakal mandal, Kurnool District of Andhra Pradesh. The site is surrounded by Uppalapadu to south, Guttapadu to east, unmettled road to west and stony waste and scattered boulders to the north. The co-ordinates of the site are given in **Table 2**. The location map of the site is given in **Figure 1** and the site layout in **Figure 2**

Table 2 Co-ordinates of the proposed site

S. No.	Longitude	Latitude
1	15°40'42.24" N	78°8'12.71" E
2	15°40'24.53" N	78°9'48.24" E
3	15°38'54.83" N	78°8'41.97" E
4	15°37'00.50" N	78°8'53.92" E
5	15°38'38.74" N	78°6'01.36" E
6	15°39'37.80" N	78°7'13.54" E

3.3 Details of alternate sites considered and the basis of selecting the proposed site

The proposed land has been acquired by APIIC following all guidelines for development of industrial park. The site is well connected by road and rail network. The National Highway NH-18 (Kurnool to Chittoor) is located along the North (1.5 km) and East (1.2 km) boundaries of the project site and Kurnool railway station at a distance of approx. 20 km NNW. There are no ecologically sensitive areas within 10 Km radius of the site, no coastal area and no flood plain riverine system within 500 m radius.

Figure 1 Location map of proposed project site

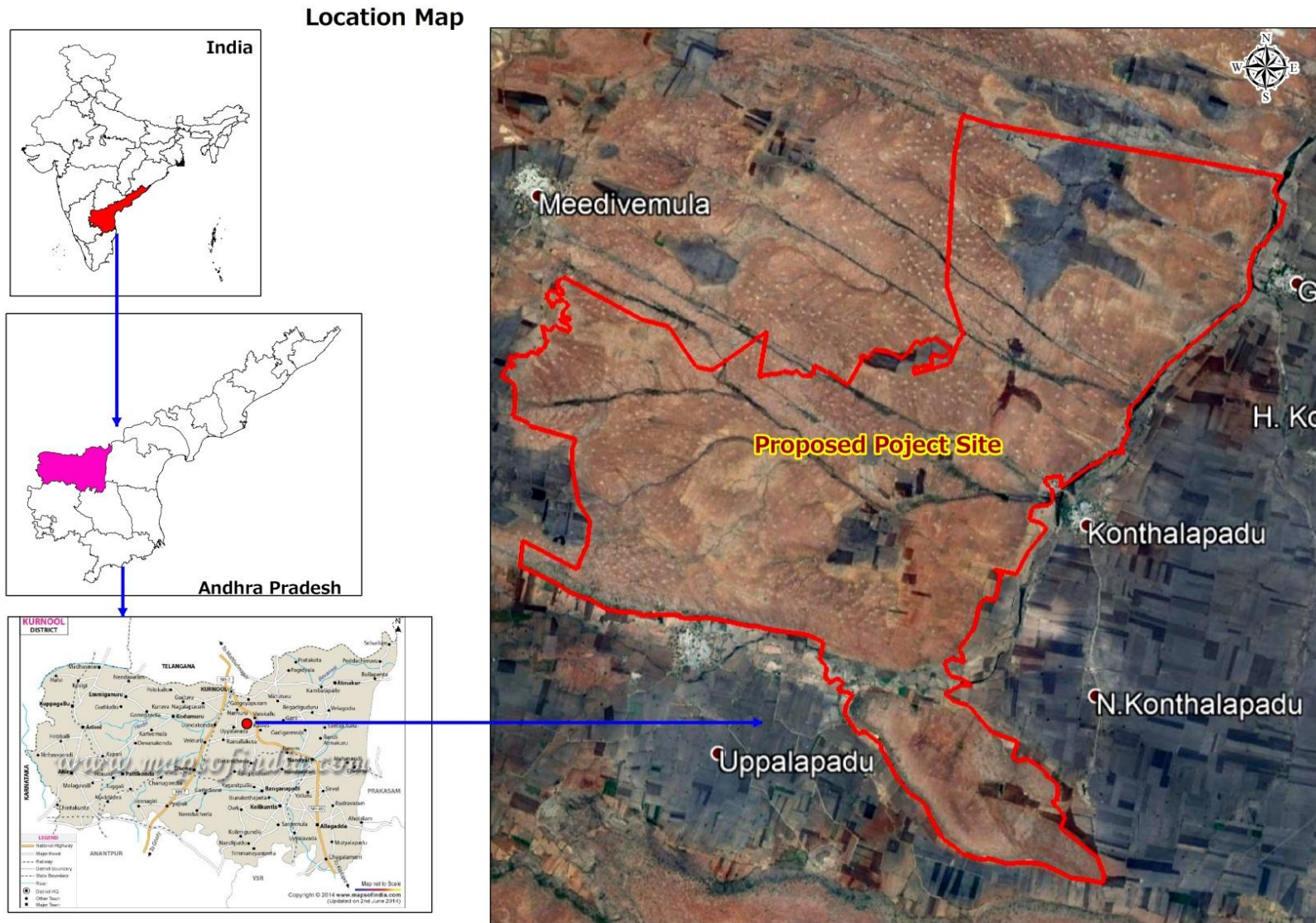
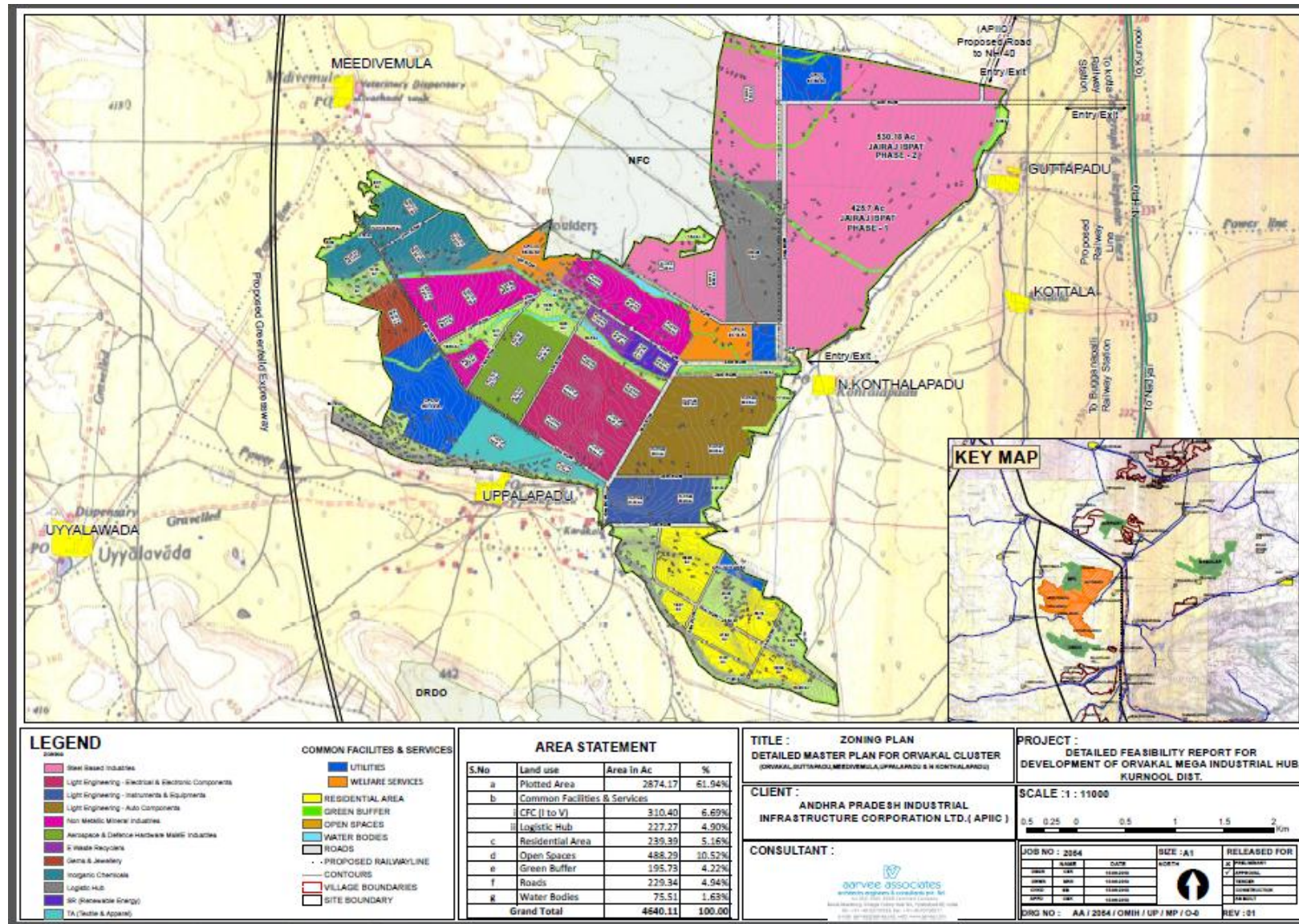


Figure 2 Site layout



3.4 Size or magnitude of operation

The project is proposed in an area of 4640.11 Ac (1877.79 Ha) at Orvakal. The details of various small, medium and large scale industries which have been proposed in the industrial park have been given **table 8**.

3.5 Project description with process details (a schematic diagram/ flow chart showing the project layout, components of the project etc. should be given)

The industrial park mainly comprises of steel based, Light Engineering, Non-metallic mineral, Aerospace & defense hardware, E-waste recyclers, Gems & Jewelers, inorganic chemical, Logistic hub, Renewable energy, textile & apparel industries. The project is targeted towards development as multi product facility, which is envisaged as a gateway to opportunities in manufacturing & trading, connectivity & availability of raw materials, skilled and unskilled workers. The site layout with industrial zoning is given in **Figure 2**.

3.6 Raw material required along with the estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product

Raw materials required for the development of common infrastructure for the proposed Industrial Park will be obtained from nearby local market.

3.7 Resource optimization/recycling and reuse envisaged in the project, if any should be briefly outlined

The new & creative approach to enable less waste intensive production based on different techniques will be adopted by regular up gradation of process technology. These techniques are as hereunder.

Source Reduction

Under this category there are 5 techniques of Cleaner Production – Energy Efficient (CP-EE) are briefly discussed below:

a) Good Housekeeping: Systems to prevent leakages & spillages through preventive maintenance schedules and routine equipment inspections. Proper working instructions, supervision and regular training of workforce would facilitate proper housekeeping.

b) Input Material change – Substitution of input materials by eco-friendly (non-toxic or less toxic than existing and renewable) material preferably having longer service time. Better Process Control Modifications of the working procedures, machine-operating instructions and process record-keeping in order to run the processes at higher efficiency and with lower waste generation and emissions.

c) Equipment Modification – Modification of existing producing equipment and utilities, addition of measuring and controlling devices, in order to run the processes at higher efficiency and lower waste and emission generation rates.

Technology Change – Replacement of the technology, processing sequence and / or synthesis pathway in order to minimize waste and emission generation during production.

d) Recycling

- **On-site Recovery and Reuse** – Reuse of waste materials in the same process or for another useful application within the industry.
- **Production of useful By-Product** – Modification of the waste generation process in order to transform the waste material into a material that can be reused or recycled for another application within or outside the company.

e) Product Modification- Characteristics of the product can be modified to minimize the environmental impacts of its production or those of the product itself during or after its use (disposal).

3.8 Availability of water its source, Energy/ Power requirement and source should be given

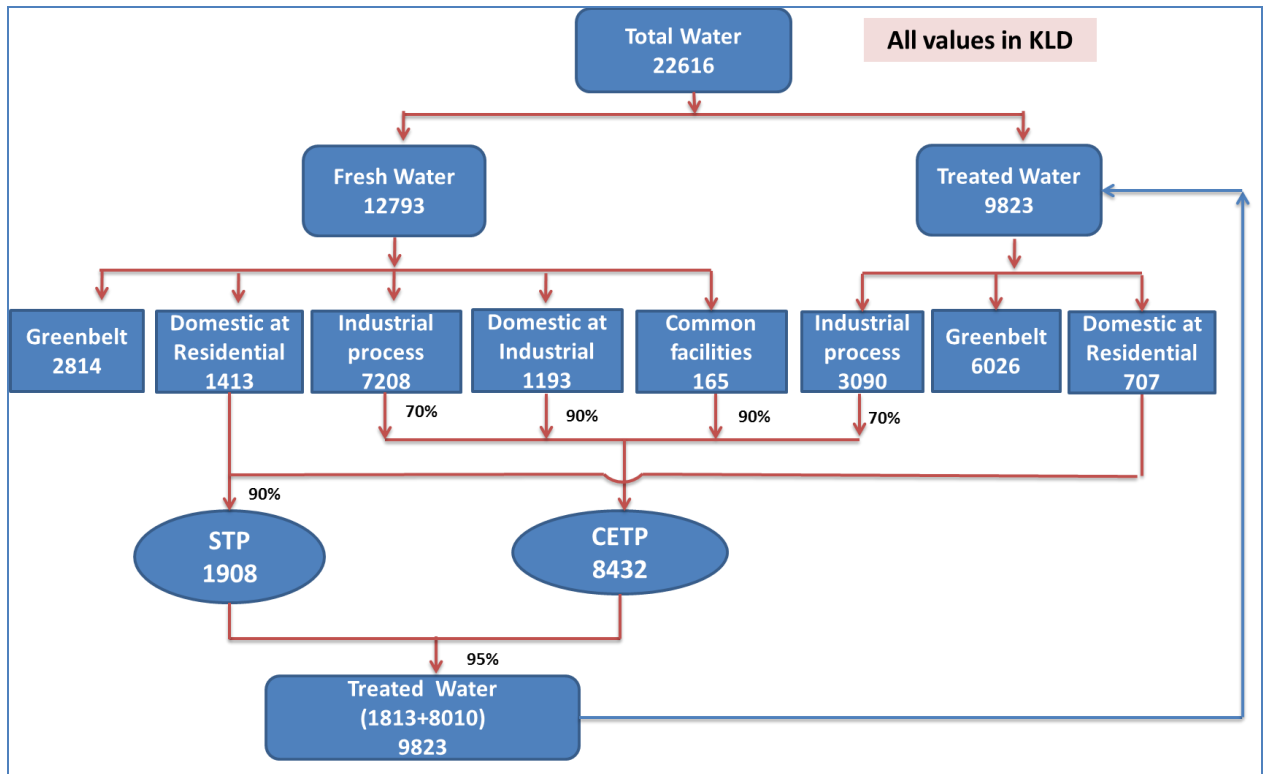
Water requirement and wastewater generation

Water required is 22616 KLD (approx. 23 MLD) for the proposed project. The details of fresh and treated water supplement for domestic, industrial, Residential and other purposes have been given in the **Table 3**. The water for the project would be drawn from Srisailam foreshore at HNSS lift station – zero at Muchumarri village. Alternate source during construction phase will be sourced from bore-wells for which necessary permissions would be obtained.

Table 3 Water requirement and waste water generation details of the project

S.No	Description	Fresh	Treated	Total	Waste water Generation
1	Industrial process	7208	3090	10298	7209
2	Domestic at industrial park	1193	0	1193	1074
3	Common facilities	165	0	165	149
4	Greenbelt Development	2814	6026	8840	0
	Sub total	11380	9116	20496	8432
5	Domestic at Residential	1413	707	2120	1908
	Total	12793	9823	22616	10340
13 KLD/Ha of industrial plots (883.98 Ha) excluding green area of 279.15 Ha. @11.65 KLD/Ha of Industrial water and @1.35 KLD/Ha of domestic water (i.e @45 lpcd for 26500 workers)					
1 KLD/Ha of Common facilities (165.37 Ha) excluding green area of 52.22 Ha.					
14 KLD/Ha of Greenbelt area (631.44 Ha) which includes Green Buffer (79.21 Ha), open space (197.60 Ha) , industrial units (279.15 Ha), Common facilities (52.22 Ha) and Residential area (23.25 Ha)					
100 lpcd for Residential (21200 persons)					

Figure 3 Water balance



Storm water drainage system

Separate & independent storm water drainage system will be provided to collect rainwater from paved area & roads. Care is being taken to prevent any other waste water from the Industry/building to get connected to this system by complete segregation between storm water drain & foul sewers. Storm runoff rate, Coefficient of run-off, Groundwater infiltration rate, Subsoil Water Drainage, Self-Cleaning Velocity in a drain line, Hydraulic Calculation for free flow of water in drains under gravity are considered while developing storm water drainage system.

Sewerage and drainage system

Access to toilets served by a robust sewer network is important for all the residents. The sewer lines within the sewerage and drainage system in the proposed project site shall be designed in accordance with the Manual on Sewerage and Sewage Treatment (2nd Edition) Published by Ministry of Urban Development, New Delhi.

All installation shall be as per the CPWD specifications. All necessary devices, in addition, to pipes and conduits, for the proper functioning of the sewerage system e.g. manholes, intercepting chambers, flushing tanks, ventilating shafts etc. shall be provided.

Power and distribution infrastructure

The required power (about 120 MW) will be drawn from nearest substation of Orvakal/Nannur/Kalvabugga. DG sets as backup power source will also be provided. Power Transmission lines will be provided for the individual industry once the facility gets

the EC from the competent authority and water pipelines will be provided for the industry based on the consumption. The power requirement details are given in **Table 4**.

Table 4 Power requirement details

S. No	Material	Requirement (Proposed)	Source
1	Power Demand (MW)	120	The required power will be drawn from nearest substation of Orvakal / Nannur / Kalvabugga.
Note:			
1) 124 kW/Ha for industrial land i.e. 883.98 Ha.			
2) 12 kW/Ha for Common facilities i.e. 165.37 Ha.			
3) 7 kW/Ha for Green belt area i.e. 631.44 Ha.			
3) 150 kW per each MLD of CETP/STP (10 MLD)			

Solar street lighting

Latest solar street lighting will be developed within the project site that operates based on outdoor lighting as a source. LED or florescent lamps will be used during the process

3.9 Quantity of wastes should be generated (liquid/solid) and scheme for their Management/disposal

Liquid waste management

The quantities of wastewater generated along with water requirement are given in **Table 5**. The wastewater generated from industrial process, domestic at industrial park and common facilities will be treated in Common Effluent Treatment Plant (CETP), the sewage generated from residential will be treated in Sewage Treatment Plant (STP). Since the project adopts the concept of “Zero Liquid Discharge”, the treated water will be reused within the Industrial park.

Table 5 Water and Wastewater Details (KLD)

S.No	Description	Water requirement	Wastewater generation	Remarks
1	Industrial process	10298	7209	Treated in CETP and will be reused for green belt, Industrial activities etc.
2	Domestic at industrial park	1193	1074	
3	Common facilities	165	149	
4	Domestic at Residential	2120	1908	Treated in STP and will be reused for green belt, flushing etc.
5	Greenbelt	8840	0	
Total		22616	10340	

Solid waste management system

Both municipal and hazardous waste would be generated from the proposed industrial park. The hazardous waste generated from the industrial processes would be sent to authorized TSDF facilities, the used oil, used batteries and other recyclable waste would be sold to the dealers or sent to authorized recyclers/TSDF. The municipal waste generated from both industrial and residential areas would be sent to municipal bins. The sludge from STP shall be used as manure. Sludge from CETP will be sent to TSDF. Ash produced from boiler will be sent to the local brick manufacturing unit. The details of solid waste are given as **Table 5**.

Table 5 Solid waste details

S. No	Details	Quantity	Remarks	Disposal
1	Hazardous waste	4420	5 kg/Ha/day	TSDF/Sale
2	Municipal waste from Industrial park	6625	0.25 kg/person	Municipal bin
3	Municipal waste from Residential area	13992	0.66 kg/person	Municipal bin
4	Waste oil	4420	5 Liters/Ha/month	TSDF/Recyclers
5	Used Batteries	1768	2 Nos/annum	Buy back/Recyclers
6	Recycling waste	8840	10 kg/Ha	TSDF/Sale
Man power at industrial park 26500				
Residential – 21200 persons				
Industrial land – 883.98 Ha. (excluding green belt area of Industrial land)				

3.10 Schematic representation of the feasibility drawing which give information of EIA purpose

For development of proposed project site screening, pre-feasibility report, environmental impact assessment (EIA) and environmental management plan (EMP) studies, etc. for obtaining environmental clearance and consent for establishment from statutory authorities are the main process.

- Submission of Form-1, Prefeasibility report, draft ToR for appraisal to concerned authority (MoEFCC)
- Obtaining official Terms of Reference from MoEFCC
- Base data collection for one season, EIA report preparation compliance with ToR
- Submission of final EIA report including public hearing minutes and action plan to MoEFCC
- Obtaining EC from MoEFCC
- Submission of CFE application to SPCB
- Obtaining CFE from SPCB

4.Site Analysis

4.1 Connectivity

The site is well connected with all the transportation facilities from nearby places. National Highway NH-18 Kurnool to Chittoor is located along the North (1.5 km) and East (1.2 km) boundaries of the project site. State Highway SH-60 Kurnool to Guntur is located 11 km north of the project site. Meedivemula to Uyyalawada road is located 2.5 km W from the project site. The nearest town is Orvakal 1.7 km, NNE. The nearest railway station is Kurnool railway station at a distance of approx. 20 km NNW. The nearest airport is Rajiv Gandhi International airport, Hyderabad at approx. 175 km N.

4.2 Land form, land use and land ownership

The total area for the Industrial Park is 4640.11 Ac (1877.79 Ha) which is owned solely by Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC).

4.3 Topography (along with map)

The proposed site is situated in undulating terrain. The topographic contours in the proposed project site are ranging from 405 to 331 m amsl (above mean sea level). The Digital Elevation Model (DEM) map of the proposed project site is shown in **Figure 4**. In the 10 km study area, is covered with hills, uplands, undulating plains and valleys. The topographic contours are ranging from 320 to 500 m amsl. The topographical map of study area (10 km) is shown in **Figure 5**.

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of the forests, national park, wildlife sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ in case of notified industrial area, a copy of the gazette notification should be given.

The proposed site is with stony waste and Rocky knob. The distance between the project site and some sensitive areas are given below:

- Rock Garden Lake 1.5 km (N)
- Kommu Cheruvu 5.5 km (ESE)
- Bayanna Cheruvu 9.3 km (W)

Figure 6 shows the Eco-sensitive areas which are away from the proposed site.

Figure 4 Digital Elevation Model (DEM) map

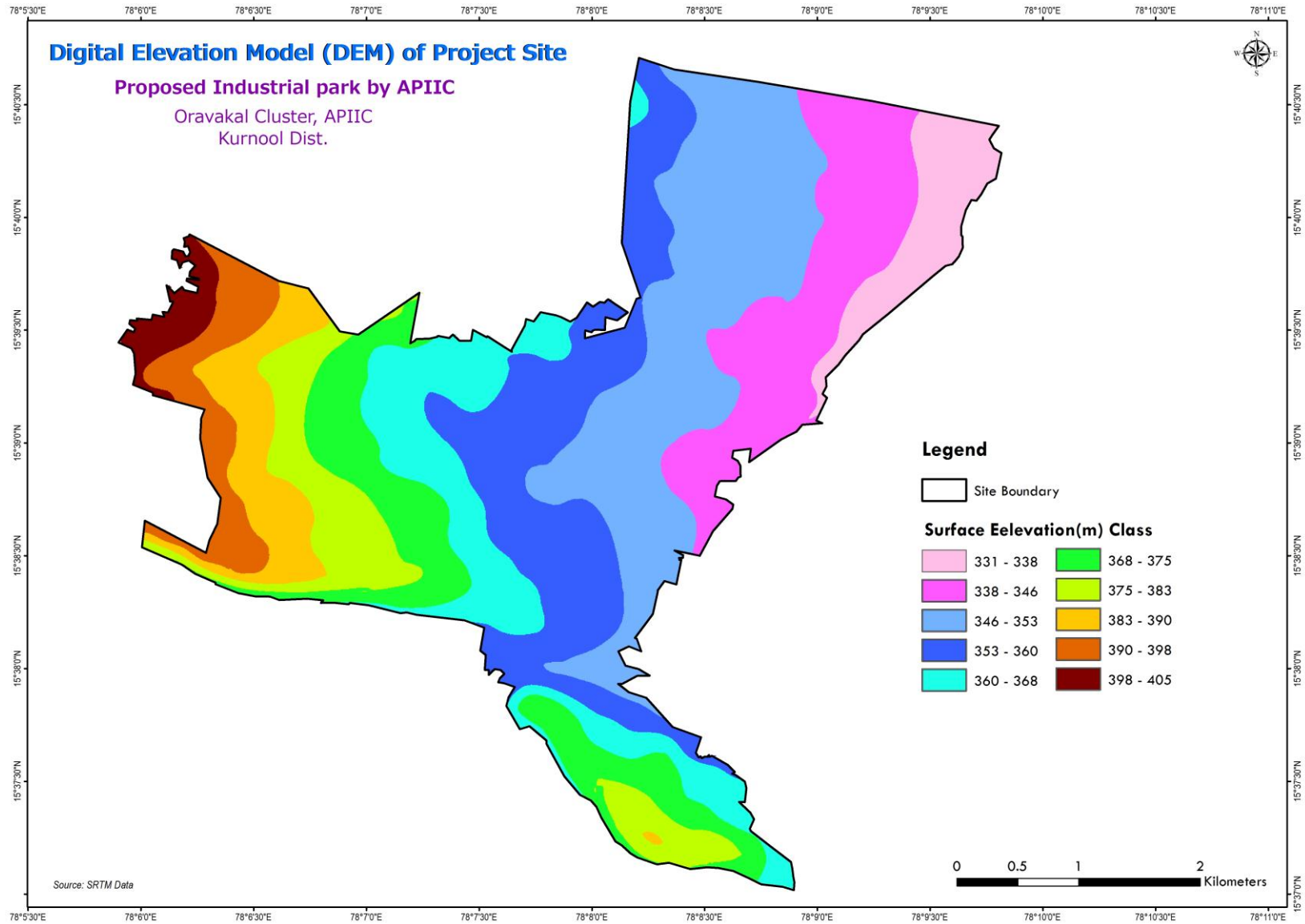


Figure 5 Topographical map showing 10 km of the study area

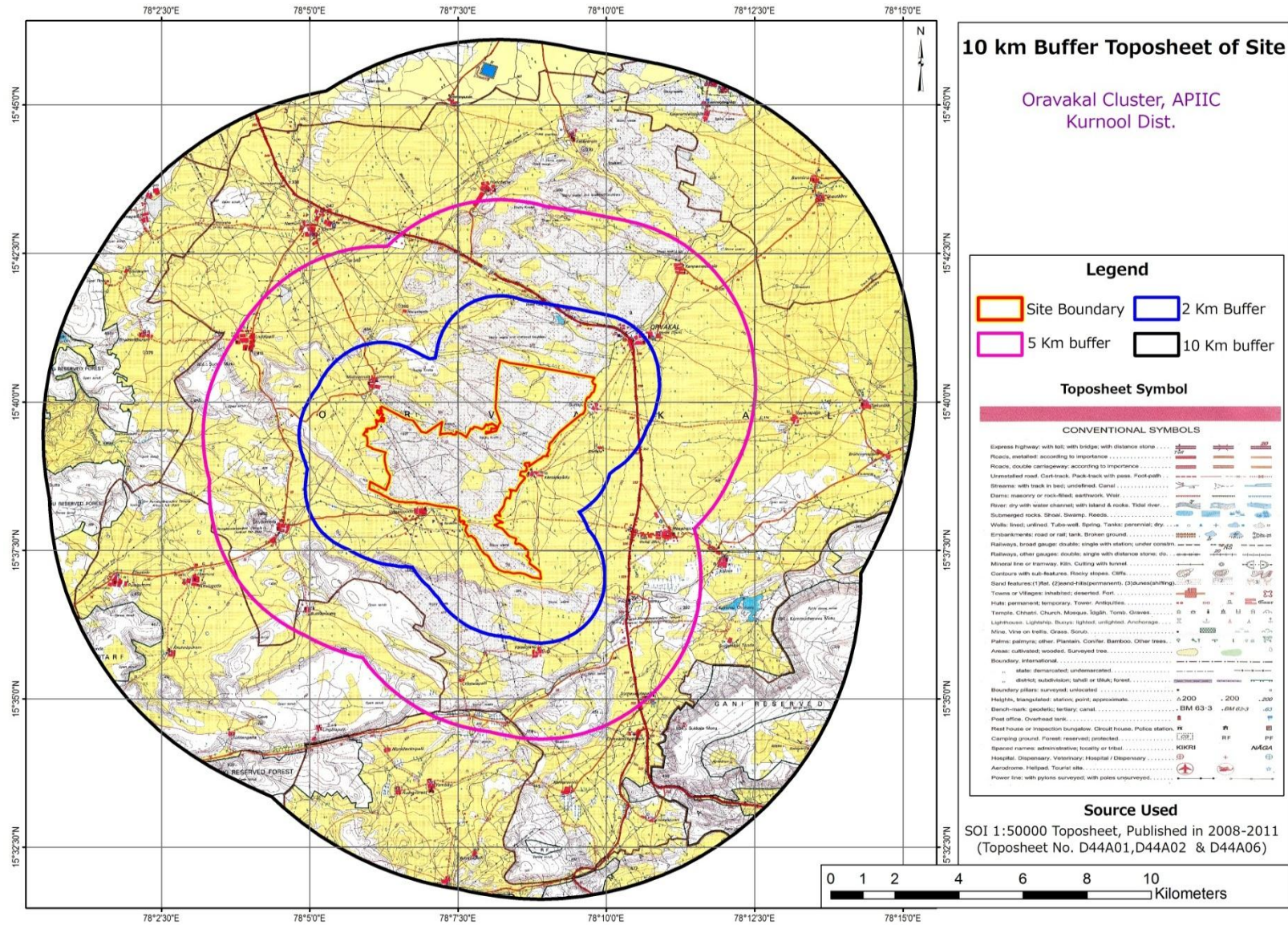
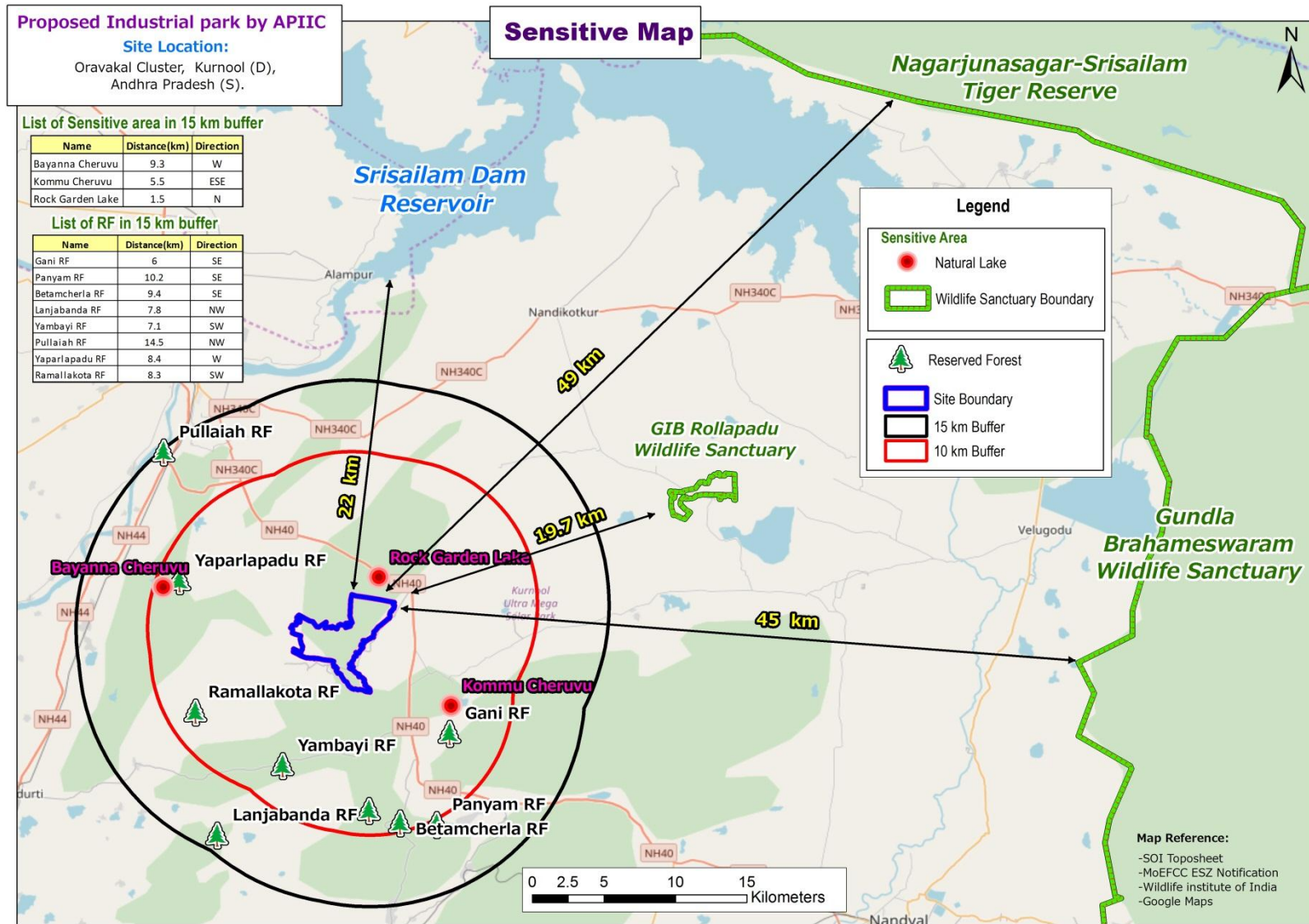


Figure 6 Eco-sensitive areas away from the proposed site



4.5 Existing infrastructure

There is no existing infrastructure in the land allocated for proposed project. Required infrastructure like roads, industrial sheds, buildings, drainage, storm water drains etc will be developed.

4.6 Soil classification

The area is spread and covered with black, red and alluvial soils. The soils of black, red, reddish-brown, yellowish-red color are found distributed all over the district. The black and red soils are occupied in uplands and plains, and the alluvial soils are mostly found in the valley portions of major streams and rivers.

4.7 Climatic data from secondary sources

The climatological data for the proposed project is acquired from secondary source (IMD, Kurnool) which is presented in **Table 6**.

Table 6 Meteorological data

Nearest IMD Station is Kurnool, 20 km NNW from the site											
Month	Temperature °C				Humidity %		Rainfall		Mean Wind speed (m/s)	Predominant wind direction	
	Mean Min	Mean Max	Lowest	Highest	Min	Max	Monthly (mm)	No of rainy days		1 st	2 nd
Jan	17.9	31.7	14.5	34.4	35	70	4.0	0.3	2.2	E	SE
Feb	20.3	34.8	16.5	37.7	26	59	2.2	0.2	2.8	E	SE
Mar	23.8	38.2	20.0	40.8	23	52	9.8	0.7	3.3	SE	E
Apr	26.7	40.1	22.4	42.6	25	51	26.4	1.6	3.9	SE	W
May	27.5	40.5	23.1	43.5	28	56	50.4	2.7	5.8	W	NW
Jun	25.5	36.2	22.3	40.8	45	68	93.6	5.7	7.9	W	SW
Jul	24.5	33.6	22.3	36.8	54	73	121.4	7.6	7.8	W	SW
Aug	23.9	32.5	22.0	35.8	57	76	143.4	9.0	7.0	W	SW
Sep	23.8	32.9	21.8	36.0	57	77	145.0	7.7	4.8	W	NW
Oct	22.8	32.5	19.7	35.2	56	75	114.1	5.2	2.4	NE	W
Nov	20.1	31.2	15.5	33.5	51	72	23.0	1.9	1.9	NE	E
Dec	17.8	30.5	14.3	32.5	44	73	3.9	0.3	1.8	E	NE

Source: GOI, Ministry of Earth Sciences, IMD, Climatological Tables 1981-2010

4.8 Social infrastructure available

Social infrastructure facilities like Hospitals, Schools, Colleges, Banks etc., are available in the nearby villages. Orvakal (1.7 km, N) is the major developed and nearby urban area having all required social infrastructure.

5.Planning Brief

5.1 Planning concept (type of industries, facilities, transportation, etc.) town and country planning/ development authority classification

The need for the environmental administration of India to become active in the field of environmental planning is founded in the Environment (Protection) Act, 1986, which authorizes the Central and State Government to have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution. Since the carrying capacity of the environment is not unlimited and some areas or ecosystems are more susceptible to adverse environmental impacts than others, the unplanned and haphazard location of industries might substantially increase the risk to the environment. Environmental planning is a proven tool for reducing the impacts from such risks. However, this tool has seldom been used in this country. Proper siting of newly planned industries and industrial estates is a strong pollution preventive instrument that ensures environmental soundness of the industrial development.

The industrial park mainly comprises of steel based, Light Engineering, Non-metallic mineral, Aerospace & defense hardware, E-waste recyclers, Gems & Jewelers, inorganic chemical, Logistic hub, Renewable energy, textile & apparel industries. The project site is well connected to road & Railway networks for transportation of raw materials, equipment, etc.

5.2 Population projection

There will be an influx of about 26500 people to the area due to the proposed project and majority of them will be hired from the nearby villages.

5.3 Land use planning (breakup along with greenbelt etc.).

The total area allocated for the industrial park is around 4640.11 Ac (1877.79 Ha). The detailed land breakup of total area is given in **Table 7**.

Table 7 Land breakup

Description	Area (Ac)	Area (Ha)	Area (%)	Remarks
Ploted area	2874.17	1163.14	61.75	Greenbelt of 15 m will be developed along the boundary, 1m along the road (two sides), open areas
Common Facilities & Services	537.68	217.59	11.55	
Residential area	239.39	96.88	5.14	
Open spaces	488.29	197.60	10.49	
Green buffer	195.73	79.21	4.52	
Roads	229.34	92.81	4.93	
water bodies	75.51	30.56	1.62	
Total	4640.11	1877.79	100	

5.4 Assessment of infrastructure demand (physical & social)

There will be a maximum influx of people to the area due to the proposed project, as the major manpower will be employed from the nearby villages. Hence the infrastructure available is sufficient to accommodate the demand.

5.5 Amenities/facilities

All the amenities/facilities such as Internal roads, Street Lighting, Storm water drains, STP, CETP, Electricity Sub Station, temporary storages for Solid and e-waste, hostel facility with dinning and kitchen, local shopping facility, mini hospital , manufacturing support services etc. are proposed by project proponent.

6. Proposed Infrastructure

6.1 Industrial area (processing area)

The proposed Industrial Park is designed keeping in view of emerging domestic demand in the country, based on market assessment. The project is targeted towards development as multi product facility, which is envisaged as a gateway to opportunities in manufacturing & trading, connectivity & availability of raw materials, skilled and unskilled workers. The details proposed industries is given in **Table 8**.

Table 8 List of industries proposed in the project

S. No	Industries	Sub sectors
1	Steel based Industry	Development of secondary steel and speciality steel products/ Low grads iron/pellets/integrated steel
2	Light Engineering	Electrical & electronic components/ Instruments & equipment/ Auto components
3	Non-metallic mineral industries	Quartz/silica/precipitate calcium carbonate
4	Aerospace & defense hardware	MSME industries
5	E-waste	Metal & scrap recycler – steel industry E-waste recycler –engineering sector
6	Gems & jewelers	Gold processing/gems cutting
7	Inorganic chemicals	Plastic additives/heavy inorganics/Fertilizers/reagents/Synthetic
8	Logistic hub	Office spaces for trading/ware houses/packaging & assembling units/truck terminal/yard activities/courier services/banking restaurants/ATM
9	Renewable Energy	Solar power
10	Textile & apparel	Weaving + apparel/fabrication workshop/apparel design & training center/ginning

6.2 Residential area (non-processing area)

Hostel facility is provided for about 5300 families with in project site, which includes around 20% of the industrial work force proposed.

6.3 Greenbelt

A 15 m wide greenbelt will be developed all around the periphery of the project site; in total 33 % of the total area will be covered under greenbelt (at park level and within individual industries) at any given time to meet MoEF&CC guidelines. Around 1600 plants/ha will be planted using local species. The distance between two plants will be kept minimum for thick

green belt, regular maintenance of green belt will be done, dead plants will be replaced with new one during rainy season.

6.4 Social infrastructure

Social infrastructure facilities like mini hospital for medical emergency of employees/hostellers, landscapes, greenery, recreational facilities, crèche/nursery, local shopping complex with restaurants/food courts/fine dining, schools primarily for children of employees have been proposed in the project.

6.5 Connectivity (traffic and transportation road/rail/metro/water ways etc.)

The site is well connected with all the transportation facilities from nearby places. National Highway NH-18 Kurnool to Chittoor is located along the North (1.5 km) and East (1.2 km) boundaries of the project site. State Highway SH-60 Kurnool to Guntur is located 11 km north of the project site. Meedivemula to Uyyalawada road is located 2.5 km W from the project site. The nearest town is Orvakal 1.7 km, NNE. The nearest railway station is Kurnool railway station at a distance of approx. 20 km NNW. The nearest airport is Rajiv Gandhi International airport, Hyderabad at approx. 175 km N.

6.6 Drinking water management (source & supply of water)

The water for the project would be drawn from Srisailem foreshore at HNSS lift station – zero at Muchumarri village, which will be treated in treatment plants to meet the required (IS 10500 Drinking water) standards and would be supplied to the hostel residents and employees for drinking purpose.

6.7 Sewerage system

The sewer lines shall be provided in accordance with the Manual on Sewerage and Sewage Treatment (2nd edition). The sewage generated from the hotel facility provided for industrial employees will be treated in STP. While the sewage generated from industrial and admin blocks will be treated in CETP along with the industrial effluents.

6.8 Industrial waste management

The industrial park proposes zero liquid discharge (ZLD) by providing CETP to cater the waste water generated from all the industrial units. The treated water will be totally re-utilized for various industrial as well as other purposes, which will be treated in Common Effluent Treatment Plant (CETP) proposed in the industrial park.

6.9 Solid waste management

Both municipal and hazardous waste would be generated from the proposed industrial park. The hazardous waste generated from the industrial processes would be sent to authorized

TSDF facilities, the used oil, used batteries and other recyclable waste would be sold to the dealers or sent to authorized recyclers/TSDF. The municipal waste generated from both industrial and residential areas would be sent to municipal bins. The sludge from STP shall be used as manure. Sludge from CETP will be sent to TSDF. Ash produced from boiler will be sent to the local brick manufacturing unit.

6.10 Power requirement & supply/ source.

The required power (about 120 MW) will be drawn from the nearest substation of Orvakal/Nannur/Kalvabugga. Further, necessary permissions/approvals shall be obtained to tap the power supply for the proposed industrial park. DG sets as backup power source will also be provided. Power Transmission lines will be provided for the individual industry once the facility gets EC from the competent authority and water pipelines will be provided for the industry based on consumption.

7. Rehabilitation and Resettlement (R&R) Plan

7.1 Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given)

The proposed Industrial Park does not envisage any disturbance to local community or the village, since the land is acquired and fully owned by the APIIC. The proposed project will not affect the home oustees, land oustees and landless laborers hence, there is no requirement of R&R implementation in this project.

8. Project Schedule & Cost Estimates

8.1 Likely date of start of construction and likely date of completion (Time schedule for the project should be given).

As per the initial estimate, around 8 months is required for implementation of the project considering the starting date i.e. from the date of receiving all the statutory clearances from concerned departments of state and central government.

8.2 Estimated project cost along with analysis in terms of economic viability of the project.

The capital cost for the proposed project is estimated to be around Rs 525 Crores. The capital cost allocated for EMP is around Rs 170 Crores with 10% recurring cost for every year.

After examining the environmental, commercial and financial feasibility of the proposed project and based on earlier experiences, it may be inferred that the project may have positive viability. The detailed cost breakup of the proposed expansion is given in **Table 9**.

Table 9 Detailed Project cost breakup

S. No.	Project Name	Estimated Cost (Rs. in Crores)
1	Internal roads	63
2	External roads	35
3	Internal water supply	20
4	Power supply	
	a. Cost of substation	110
	b. Cost of transmission lines	13
	c. Cost for solar	5
5	CETP	50
6	STP	10
7	Rain water harvesting	25
8	Storm water drains	15
9	Sewer line	5
10	Greenbelt	80
11	Utilities	84
12	Other development & Miscellaneous	10
Total Amount		525
Note: The above cost includes capital cost of EMP Rs. 170 Crores.		
CER budget allocated is Rs. 8 Crores as per norms (not included in the project cost)		

9. Analysis of Proposal (Final Recommendations)

9.1 Financial and social benefits with special emphasis on the benefit to the local people including tribal population if any, in the area.

The proposed Orvakal Industrial Park, within Orvakal Mega Industrial Hub will provide impetus for the growth of large scale mineral based industries and also small and medium scale industries in value chain and other support infrastructure like logistics and other institutional facilities are expected to bring significant socio-economic and environmental benefits both at local level as listed below

- **Employment:** The proposed project is expected to create employment opportunities in the region. The proposed industries, trade pavilion, convention & exhibition facilities, shopping, hospital, etc. would create robust market linkages resulting in regional economic development.
- **Connectivity:** The proposed external infrastructure linkages are expected to provide excellent connectivity of the region with the International Airport, urban centres and other economic growth centers. Overall, the proposed project is expected to enhance the economic development in the region.
- **Social Development:** Integrated townships consisting of residential, commercial, institutional with requisite physical and social infrastructure facilities are definite means of social development expected from the project. Technology development is also anticipated with world class R&D centres being proposed in the project.
- **Regional Development:** The goods and products manufactured from the industries of proposed project would fill the demand-supply gap and hence improve the domestic markets

Thus, the proposed project shall usher in the social and economic upliftment of the persons associated as employees and those living in the vicinity of the project.