DEVELOPMENT OF CHITTOOR NODE- CHITTOOR SOUTH CLUSTER START UP AREA AS A PART OF VCICDP

Pre Feasibility Report
September 2018
Client: Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC)
Vijayawada, AP

Project: DPR VCIC CTR Node (SB)

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1 Preface

Visakhapatnam - Chennai Industrial Corridor (VCIC), is a key part of the East Coast Economic Corridor (ECEC), India’s first coastal corridor. GOI has selected the Asian Development Bank (ADB) as the lead partner for developing the ECEC, which will run from Kolkata (in West Bengal) to Kanyakumari (in Tamil Nadu). VCIC traverses along the nine coastal districts of Andhra Pradesh. The conceptualization and development of VCIC has received major support from Asian Development Bank (ADB). Government of Andhra Pradesh has extended the maximum support in making the Industrial Corridor a reality. Andhra Pradesh is making aggressive efforts in attracting industrial investment through robust Industrial policy supported with aggressive promotion campaign. Initially four nodes i.e. Vizag, Kakinada, Kankipadu-Gannavaram and Yerpedu – Srikalahasthi were proposed during the CDP stage. Finally two nodes one at Vizag and other at Chittoor (Srikalahasthi) were suggested.

Andhra Pradesh Industrial Infrastructure Corporation (APIIC) played a key role in shortlisting of the nodes. Chittoor node has two project sites, north block site and south block site. In which, the Initial phase of start-up area of about 2770 acres (~1121 ha) has been delineated in the south cluster site by APIIC for the Industrial development.

The following Figure 1-1 shows the location of VCIC and project site.

![Figure 1-1: Location of Project with in VCIC](image)

As a first step towards implementation, APIIC intends to seek environmental clearance conforming to MoEF&CC requirements. The current document forms the Pre-Feasibility
Report which is prepared as per the Guidelines issued by the Ministry of Environment and Forests (Guidelines for preparation of Pre-Feasibility report for obtaining prior Environmental Clearance in terms of the provisions of EIA Notification, 2006) dated December 30, 2010. In accordance with the guidelines, this report is structured into the following sections:

- Executive Summary
- Project Introduction/ Background Information
- Project Description
- Planning Brief
- Proposed Infrastructure
- Rehabilitation and Resettlement Plan
- Project Schedule and Cost Estimates
- Analysis of Proposal

1 The subsections under each section have also been structured as per the Guidelines as applicable to the current project.
2 Executive Summary

India has emerged as the fastest growing economy in the world and is heading to become the third largest economy by 2030. Given a huge domestic market, a large pool of youthful workforce and a strategic position to integrate with the global economy, India has great potential to further its economic progress.

To remain on a sustainable growth trajectory, India must continue to create economic opportunities for its labor force, which is increasing by about 12 million a year. One urgent challenge is to create more high value added and well-paying jobs in the manufacturing sector, which has been limited to 17% of GDP versus 21-29% in East and Southeast Asia. In a bid to enhance India’s manufacturing sector share, several initiatives were launched by the government including its flagship Make in India campaign, which aims to make India a global manufacturing hub. Under the Make in India initiative, economic corridors will serve as a backbone of an internationally competitive manufacturing sector. Through provision of world-class infrastructure and favorable business environment, economic corridors are expected to attract foreign investment and facilitate the establishment of manufacturing centers.

India has five major economic corridors under various stages of development. Among them is the East Coast Economic Corridor (ECEC), touted India’s first coastal economic corridor and stretches about 2,500 kilometers along the country’s eastern coast — from Kolkata in the north to Kanyakumari in the south — traversing the four states of West Bengal, Odisha, Andhra Pradesh and Tamil Nadu. With its long coastline and strategically-located ports, ECEC is poised to play a crucial role in integrating India with East and Southeast Asia through enhanced trade and links to Global Value Chains (GVCs). This perfectly aligns with India’s national objective of port-based industrialization under the Sagarmala Initiative and to strengthen economic relations with eastern Asia under Act East policy.

The objectives of the Visakhapatnam–Chennai Industrial Corridor (VCIC) project include expanding industrial output, increasing employment opportunities, improving labor productivity and worker skills, and raising living standards in the region. VCIC, with National Highway 5 as its spine, is aligned along the east coast of India, covering more than 800 kilometers of coastline in the state of Andhra Pradesh. With its long coastline and ports, the corridor is poised to play a crucial role in India’s Act East policy by providing connectivity and integration with global production networks and value chains in emerging East Asian and Southeast Asian markets, along with other global markets.

Initially four nodes i.e. Vizag, Kakinada, Kankipadu- Gannavaram and Yerpedu – Srikalahasti were proposed during the CDP stage. The Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) confirmed the sites for Visakhapatnam and Chittoor/Srikalahasti nodes and Finally two nodes one at Vizag and other at Chittoor/Srikalahasti were suggested.

Chittoor/Srikalahasti node is strategically located at the southern tip of the state of Andhra Pradesh and close to the city of Chennai, which has a population of 8.5 million. Location-wise, it is ideal, being well-connected globally and locally through infrastructure including roads, rail networks, airports, and seaports. There are four seaports within a 120-kilometer (km) radius: Krishnapatnam Port, Ennore Port, Kattupalli Port and Chennai Port. The site is also well-connected by air to the rest of the world via two international airports. The nearest airport is Tirupati International Airport; within a 2-hour journey is the busy Chennai International Airport. The site is also well-served by railways and highways. This region is the current industrial destination for most foreign investors wishing to set up manufacturing plants in East India, as evidenced by the success of the Sri City Special Economic Zone and the high level of foreign direct investment being attracted to Tamil Nadu, particularly investments in the auto clusters around Chennai and the nearby Srikalahasti (Chittoor) district of Andhra Pradesh.
Chittoor/Srikalahasti node is 25 km to the east of Tirupati’s city core. The node is situated east of Srikalahasti town, with a population of about 100,000, along the main Chennai highway. It is a rarity to have such a large contiguous land mass of more than 25,000 acres available for development in India.

The Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) was able to assemble a vast greenfield site with generally flat topography, which is suitable for industrial development, at the town’s outskirts. For many years, there have been several state government initiatives to promote industrial development in the region. As a result of investor-friendly policies and promotional activities, the state attracted several industrial investments since 2015. Focus sectors in the district include agro- and food processing, electronics, textiles, automobiles and auto components, and heavy engineering etc.,

APIIC intends to develop the Chittoor/Srikalahasti node in a phased manner and accordingly earmarked 2770 acres (~1121 ha) of land in the South Cluster as a Start-up area.

Based on the Conceptual Masterplan, industries with the following characteristics are identified into 8 categories for development in Chittoor/Srikalahasti node: 1. Building Materials Industry/Non Metallic minerals 2. Electronics and Consumer Durable Industry 3. Engineering Industries (Machinery/ Electrical Equipment's/ Automobile etc.,) 4. Food and Agro Processing Industry 5. Apparels and Textile Industry 6. Chemical and Pharma Industry 7. Logistic and Ware house and 8. MSME (includes Leather, Plastics, wood etc.,) Proposed supporting uses includes residential area, commercial area which is adjacent to the residential area planned to provide necessary services for residents, employees and visitors. Proposed subcomponent within commercial plot includes hotel, offices, retails, eateries and Industrial Training Centre.

Open Space/Green area proposed in the start-up area is around 11% of the total area. The proposed project will integrate green and sustainability features in its development. The development of the master plan shall be driven on strong foundation of sustainability concepts.

Total one time water demand for the proposed project is ~18.0 MLD but considering the reuse of ~10.0 KLD of treated wastewater, the actual fresh water demand is ~8.0 MLD. The quantity of water required for fire protection is 0.74 MLD. The water requirement for the start-up area will be met from Kandaleru Reservoir through approved the Bulk water supply project planned by APIIC aimed to provide reliable and continuous supply of water to the industrial clusters located in Nellore and Chittoor districts of Andhra Pradesh.

The power requirement during the operation phase of the proposed IP is ~106 MVA. The energy/power for the proposed start-up area will be sourced from 400 KV substation of APSPDCCL which is under construction in Rachagunneri substation at Yerpedu Mandal, west of Srikalahasti. The estimated Industrial wastewater generation is about 6.45 MLD and total sewage will be about 3.89 MLD. The Start-up area will have a common facility for treating the industrial and domestic wastewaters (STPs/CETPs). The wastewater characteristics of the individual sectors will be analyzed and based on the compatibility with other sectors treatment facility shall be conceptualized. Possibility of combining and treating the Industrial area sewage and industrial wastewater will also be analysed. The treated wastewater shall be recycled and reused in the system. Industries willing to have their own treatment facilities for effluent and sewage shall be developed by the industry in their premises. The sewage generated (2.77 MLD) at residential area will be treated in STP which will be developed on modular basis.

MSW generated for the proposed IP is estimated to be ~15.0 TPD and Industrial solid waste including hazardous and non-hazardous waste is estimated to be ~102 TPD. Municipal waste in the form of canteen waste, commercial wastes from operations will be generated. Disposal of these wastes will be carried out as per prevailing norms. Hazardous waste will be sent to new TSDF near Raviguntapalli, Nellore which is 60 km north of the start-up area. Industries shall
follow Hazardous and Other Waste (Management and Transboundary Movement) and amendment thereof, 2016.

The strategic location of site with good transport facility offers comfortable access to site and other cities of India. The North side approach road is NH 71, an Internal road from the hinterland of the project site joins NH 71 lies outside the project site and the Secondary approach road is Tada - Srikalahasti road (SH - 4437), lies outside the southern part of the project site. Andhra Pradesh Road Development Corporation (APRDC) is planning to develop Link road connectivity NH 71 with the Srikalahasti – Tada Road through the Start-up area.

The project cost is estimated at about INR 466 Crores Proposed Chittoor Node-Chittoor South Cluster Start up area is likely to generate direct employment of ~30,000 nos.
3 Project Introduction/ Background Information

3.1 Project Identification

Visakhapatnam - Chennai Industrial Corridor (VCIC), is a key part of the East Coast Economic Corridor (ECEC), India's first coastal corridor. GOI has selected the Asian Development Bank (ADB) as the lead partner for developing the ECEC, which will run from Kolkata (in West Bengal) to Kanyakumari (in Tamil Nadu). VCIC traverses along the nine coastal districts of Andhra Pradesh. The conceptualization and development of VCIC has received major support from Asian Development Bank (ADB). Government of Andhra Pradesh has extended the maximum support in making the Industrial Corridor a reality. Andhra Pradesh is making aggressive efforts in attracting industrial investment through robust Industrial policy supported with aggressive promotion campaign. Initially four nodes i.e. Vizag, Kakinada, Kankipadu-Gannavaram and Yerpedu – Sirkalahasti were proposed during the CDP stage. Finally two nodes one at Vizag and other at Chittoor/Sirkalahasti were suggested. Chittoor/Sirkalahasti node has two project sites, north block site and south block site. In which, the Initial phase of start-up area of about 2770 acres (~1121 ha) has been delineated in the south cluster site for the Industrial development.

3.2 Project Developer

Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC), a wholly owned undertaking of Government of Andhra Pradesh (GoAP) has a mandate to develop industrial areas across the state. APIIC has developed around 300 Industrial Parks spread over an extent of 121,655 acres and in addition it has also developed sector specific industrial parks and special economic zones at strategic locations across the state.

Andhra Pradesh Industrial Infrastructure Corporation (APIIC) played a key role in shortlisting of the nodes. APIIC is the owner of the lands identified in both the nodes. As part of the mandate and also part of the initial phase of start-up area industrial development, APIIC has initiated development of Start-up area of Chittoor South Cluster in Thottamedu and B.N. Kandriga Mandals of Chittoor District, Andhra Pradesh.

3.3 Project Site Location

The project site is covering an area of about 2770 acres (~1121 ha) is located in Routhisurumala, Gowdamala, Kothatpalem, Alathuru and B.S.Puram villages in Thottamedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh.
The site is located at a distance of about 125 km- north west of the Major urban centre, Chennai; 50 km to the Sricity; 50 km to Tirupathi; and 6 km east of Srikalahasti, a tourist centre, near to project site. The Project site is contiguous and relatively large land parcel. Vijayawada is the commercial headquarters of Andhra Pradesh is at the distance of 370 km from the project site, get connected through NH16 via Naidupeta. Sricity is a SEZ - integrated township, with the world class infrastructure, lies at the distance of 50km from the project site. The North side approach road is NH 71, an Internal road from the hinterland of the project site joins NH 71 lies outside the project site and the Secondary approach road is Tada - Srikalahasti road (Chennai road), lies outside the southern part of the project site.

The multi modal transport connectivity is noticed around the project site, the node is accessible to Tirupati international airport on the west, Krishnapatnam port in the north and Durgarajupatnam port in the east within a 50km radius.
3.4 Brief Description of Nature of Project

The product mix proposed for the project site is provided in the following Table 3-1.

Table 3-1: Focus Sectors for Investment Envisaged in the proposed Start-up Area

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<th>S.No</th>
<th>Anticipated Industrial Sector</th>
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<tr>
<td>1.</td>
<td>Building Materials Industry/Non Metallic minerals</td>
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<tr>
<td>2.</td>
<td>Electronics and Consumer Durable Industry</td>
</tr>
<tr>
<td>3.</td>
<td>Engineering Industries (Machinery/ Electrical Equipment’s/ Automobile etc.,)</td>
</tr>
<tr>
<td>4.</td>
<td>Food and Agro Processing Industry</td>
</tr>
<tr>
<td>5.</td>
<td>Apparels and Textile Industry</td>
</tr>
<tr>
<td>6.</td>
<td>Chemical and Pharma Industry</td>
</tr>
<tr>
<td>7.</td>
<td>Logistic and Ware house</td>
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<tr>
<td>8.</td>
<td>MSME (includes Leather, Plastics, wood etc.,)</td>
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</table>

Apart from the manufacturing zone, total area is planned for logistic hub, residential area, commercial area which is adjacent to the residential area planned to provide necessary services for residents, employees and visitors, Open Space/Green, amenities and utility space, circulation (roads and parking) etc. Proposed subcomponent within commercial plot includes hotel, offices, retails, eateries and Industrial Training Centre.

Utilities will include water supply system, sewage network and wastewater treatment facility, waste management facilities, power sub-station and distribution network, fire station. Based on the requirement, these facilities are spread across the project site.
The proposed project will integrate green and sustainability features in its development. The development of the master plan shall be driven on strong foundation of sustainability concepts.

### 3.4.1 Industrial Sector Categorisation as per EIA Notification

Detailed information about types of industries/activities proposed along with its categorisation with respect to EIA Notification 2006 (as amended) and pollution potential with respect to CPCB Categorization of Industries is given below.

**Table 3-2: Industrial sector categorisation**

<table>
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<th>S. No.</th>
<th>Possible Sector</th>
<th>Anticipated Types of Industries/ Activities</th>
<th>Categorisation of Industry as per EIA notification, 2006</th>
<th>Categorization as per CPCB2</th>
<th>CPCB - Pollution Potential</th>
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<tr>
<td>1</td>
<td>Building Materials Industry/Non Metallic minerals</td>
<td>Tiles, Ceramics and refractories, glass and glassware, graphite, marbles, processed minerals, Clay building products, bricks, AAC Blocks, Kerb Stones etc.</td>
<td>Not Applicable</td>
<td>Red, Orange and Green</td>
<td>A1C, HW1, A1D, A1F, W14 W17</td>
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<tr>
<td>2</td>
<td>Electronics and Consumer Durable Industry</td>
<td>Communication Equipment (Mobiles/BTS/Router/switches/Dish Antennas), Consumer Electronics (TV/Cameras/set top boxes), Electronic Components, Industrial Electronics (Invertors/UPS/LEDs/Energy meters etc..) and Consumer durables such as Washing machines, Refrigerators, Air conditioners, Microwave ovens, Kitchen equipment, utensils, Brown goods and domestic appliances Pressure cookers, Collapsible tubes, utensils, cutlery, wire products etc</td>
<td>Not Applicable</td>
<td>Orange and White</td>
<td>A1C, W14, W13 &amp; HW4</td>
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<tr>
<td>3</td>
<td>Food and Agro Processing Industry</td>
<td>Processing and preserving of fruit and vegetables, Manufacture of grain mill products, starches and starch products (includes flour milling, rice milling, milling of other grains), Manufacture of cocoa, chocolate and sugar confectionery, Manufacture of macaroni, noodles, couscous and similar farinaceous products, Manufacture of prepared meals and dishes, Manufacture of other food products Processing and preserving of meat (includes production, processing and preserving of meat and meat products, aqua food related processing (fish and prawns etc.) Manufacture of dairy products (includes manufacturing of milk, milk powder, ice cream etc.) Manufacture of other food products (includes manufacture of bakery products Processing of edible nuts etc.) Manufacture of prepared animal feeds (manufacture of cattle feed, poultry feed, feed for pets etc.)</td>
<td>Not Applicable</td>
<td>Red, Orange Green and White</td>
<td>W13, W17, A1C, A2F2, W2, W13, A1D, A12, A1F,G, W16</td>
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</table>
| 4      | Engineering Industries (Machinery/ Electrical Equipment's/ Automobile etc.) | **Heavy Engineering Goods**  
Industrial Machinery  
Mining Machinery, Construction Machinery, Material handling equipment, Metallurgical equipment, Textile machinery, Air pollution control systems, Furnaces, cooling towers etc  
Heavy electrical equipment and  
Electrical motors, generators, Boilers, turbines, power cables, inverters, switch gears, Capacitors | (Category A and B for Metallurgical industries for ferrous & non-ferrous) | Red, Orange and White | W11, A1C, HW3, W13, W2, A2F1, A2F2, HW1, A1D, W17, HW4, A1F,G |

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2 Final Document on Revised Classification of Industrial Sectors Under Red, Orange, Green and White Categories (February 29, 2016), CPCB
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<th>Anticipated Types of Industries/ Activities</th>
<th>Categorisation of Industry as per EIA notification, 2006</th>
<th>Categorization as per CPCB²</th>
<th>CPCB - Pollution Potential</th>
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<td>5</td>
<td>Apparels and Textile Industry</td>
<td>Ginning/Weaving, Spinning mills, Weaving and Knitting Mills cotton and manmade fabrics and apparels manufacturing; technical textiles (Mainly textile based) and handloom. No Yarn / Textile processing involving any effluent/emission generating processes including bleaching, dyeing, printing and colouring is proposed</td>
<td>Category A and B for manmade fibres manufacturing</td>
<td>Red, Orange, Green and White</td>
<td>W11, W2, W17, A1B, A2F1, A1D, HW4, A1F</td>
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<td>Steel pipes and tubes</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Castings and forgings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Others</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- transformers etc
- Printing and Processing Machines, Transmission Shafts
- Machinery for processing chemicals, Food, cement, plastics, Hydro carbons, Pharmaceuticals, sugar, Injection- moulding machines
- CNC Machines
- Floating docks and storage vessels
- Compression Ignition and Electrical Ignition type IC Engines Compact engines, parts of IC engines
- Power cables, Electric filament or Discharge lamps, electric wires and cables, Insulated Wires, Electric Conductors and Optical Fibre Cables, Wires and Cables of Oxygen Free Copper, wire ropes etc
- Industrial Gears, Pumps, compressors, Valves, electric fans, Diesel engines etc
- Antifriction Bearings, cutting tools, dry cells copper cathodes and sections of cathodes unwrought.
- Aluminium extruded and rolled products
- High tensile fasteners, Industrial fasteners, nuts bolts
- Seamless pipes and tubes of iron and steel, Welded pipes and Tubes of iron/ steel tube or pipe fittings of iron or steel.
- Steel, alloy steel and non-ferrous metals for engineering, automobile and shipping sectors
- Manufacture of basic iron and steel (Ferro alloys, wire of steel by cold drawing, tube and tube fittings etc.) and basic precious and other non-ferrous metals
- Manufacture of motor vehicles (such as manufacturing of Tractors, Buses etc.)
- Manufacture of parts and accessories for motor vehicles (includes parts such as brakes, gearboxes, axles, seats, tyres, rubber products etc.)
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Possible Sector</th>
<th>Anticipated Types of Industries/ Activities</th>
<th>Categorisation of Industry as per EIA notification, 2006</th>
<th>Categorization as per CPCB</th>
<th>CPCB - Pollution Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Chemical and Pharma Industry</td>
<td>Herbal medicines, bio pharmaceuticals, Formulations, laboratory Chemicals involving distillation, purification process, Herbal Extraction, production of cosmetics, manufacturing of soaps, Organic Chemicals (Methane to methanol and menthol based), inorganic Chemicals (Industrial gases, acids, etc..), Agro chemicals such as Pesticides/Insecticides/Fungicides/Herbicides/Agrochemical formulation, NPK Fertilisers/Granulation, water treatment chemicals etc..</td>
<td>Category B</td>
<td>Red and Orange</td>
<td>W11, A1B, A1C, HW1, HW4, W17, A2F1, W2, A1A, A2F2, W13, A1D, HW2</td>
</tr>
<tr>
<td>7</td>
<td>Logistic and Warehouse</td>
<td>Activities include warehousing, trading and value added services such as packaging, labelling, re-invoicing, Complete Knock-Down (CKD) and Semi Knocked Down (SKD) assembly, cutting, polishing and blending. It also facilitates exports, imports and re-exports, hubbing and distribution</td>
<td>Not Applicable</td>
<td>Green/White</td>
<td>A1F</td>
</tr>
<tr>
<td>8</td>
<td>MSME (includes Leather, Plastics, wood etc..)</td>
<td>Leather Products such as Sports goods excluding tanning and hide processing Plastic products for Packaging, automobile, consumer durables, healthcare, etc by Injection, Blow Moulding, Extrusion etc., Timber/Wood Products such as Furniture, Sports goods, Wood Flooring etc.</td>
<td>Not Applicable</td>
<td>Orange, Green and White</td>
<td>A1C, A1F, W17, A1D</td>
</tr>
</tbody>
</table>
### Water Pollution

<table>
<thead>
<tr>
<th>W11</th>
<th>Waste-water which is polluted and the pollutants are –</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• not easily biodegradable (very high strength waste waters having BOD &gt; 5000 mg/l); or</td>
</tr>
<tr>
<td></td>
<td>• Toxic; or both toxic and not easily biodegradable.</td>
</tr>
<tr>
<td></td>
<td>(Presence of criteria water pollutants having prescribed standard limits up-to 10 mg/l or having BOD &gt; 5000 mg/l).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W12</th>
<th>Non-toxic high strength polluted waste-water having BOD in the range of 1000-5000 mg/l and the pollutants are biodegradable.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Presence of criteria water pollutants having prescribed standard limits from 11 mg/l to 250 mg/l and having BOD strength in the range of 1000-5000 mg/l).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W13</th>
<th>Nontoxic – polluted waste-water having BOD below 1000 mg/l and the pollutants are easily biodegradable. (Presence of criteria water pollutants having prescribed standard limits from 11mg/l to 250 mg/l and having BOD strength below 1000 mg/l).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W14</th>
<th>Waste-water generated from the chemical processes and which is polluted due to presence of high TDS (total dissolved solids) of inorganic nature.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W15</th>
<th>Waste-water generated from the physical unit operations / processes and which is polluted due to presence of TDS (total dissolved solids) of inorganic nature and of natural origin like fresh-water RO rejects, boiler blow-downs, brine solution rejects etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W17</th>
<th>Waste-water from cooling towers and cooling-re-circulation processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>W2</td>
<td>Industry having overall liquid waste generation of 100 KLD or more including industrial &amp; domestic waste-water.</td>
</tr>
</tbody>
</table>

### Air Pollution

<table>
<thead>
<tr>
<th>Group A1A</th>
<th>Presence of criteria air pollutants having prescribed standard limits up to 2 mg/Nm$^3$</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group A1B</th>
<th>Presence of criteria air pollutants having prescribed standard from 3 to 10 mg/Nm$^3$</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group A1C</th>
<th>Presence of criteria air pollutants having prescribed standard from 11 to 50 mg/Nm$^3$</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group A1D</th>
<th>Presence of criteria air pollutants having prescribed standard from 51 to 250 mg/Nm$^3$</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group A1E</th>
<th>Presence of criteria air pollutants having prescribed standard from 251 mg/Nm$^3$ &amp; above.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group A1F</th>
<th>Generation of fugitive emissions of Particulate Matters which are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Not generated as a result of combustion of any kind of fossil-fuel.</td>
</tr>
<tr>
<td></td>
<td>• Generated due to handling / processing of materials without involving the use of any kind of chemicals.</td>
</tr>
<tr>
<td></td>
<td>• Which can be easily contained /controlled with simple conventional methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group A1G</th>
<th>Generation of Odours which are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Generated due to application of binding gums / cements /adhesives /enamels</td>
</tr>
<tr>
<td></td>
<td>• Which can be easily contained /controlled with simple conventional methods</td>
</tr>
</tbody>
</table>

| Group A2F1 | All such industries in which the daily consumption of coal/fuel is more than 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled only with high level equipments / technology like ESPs, Bag House Filters, High Efficiency chemical wet scrubbers etc. |

| Group A2F2 | All such industries in which the daily consumption of coal/fuel is from 12 MT/day to 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled with suitable proven technology. |

### Hazardous Waste Generation

<table>
<thead>
<tr>
<th>HW1</th>
<th>Land disposable HW which require special care &amp; treatment for stabilization before disposal.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HW2</th>
<th>Incinerable HW</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HW3</th>
<th>• Land disposable HW which doesn’t require treatment &amp; stabilization before disposal.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• High volume low effect wastes such as fly-ash, phospho-gypsum, red-mud, slags from pyro-metallurgical operations, mine tailings and ore beneficiation rejects)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HW4</th>
<th>Recyclable HW, which are easily recyclable with proven technologies.</th>
</tr>
</thead>
</table>
3.5 **Need for the Project**

### 3.5.1 General

Industrial development under VCIC will transform Srikalahasti into a world class industrial township. The surrounding cities of Tirupati and Naidupeta will also benefit from the development. Furthermore, the long-term master planning of Chittoor/Srikalahasti node will ensure sustainable urban development and create an economically vibrant VCIC that will extend to neighboring Chennai, which already is an established megapolis.

Chittoor/Srikalahasti Node Development Vision is attracting high-value-adding industries with globally competitive infrastructure, with the capacity for sustaining high growth in the ecosystem by targeting competitive industries for sustainable growth. The vision is also derived from continuous consultations with key officials of the Government of Andhra Pradesh, reviews of Andhra Pradesh’s Vision 2029, the overall VCIC vision formulated in the Regional Perspective Plan, and feedback from the local manufacturing ecosystem.

As the world increasingly becomes globalized, value chains have become more international and fragmented. This has led to a rapid increase in trade flows of intermediate goods especially in the manufacturing sector. This trade in parts, accessories, and components has encouraged the specialization of different economies that add value to the global production chain. Specialization is no longer based on just the overall comparative advantage of countries in producing a final good, but also on the comparative advantage of tasks that these countries complete at a specific step along the global value chain.

For the developing economies that promote manufacturing investments, linkages with Global Production Networks (GPNs) of multinational firms provide opportunities in economic integration and economic upgrading. The development cycle is mapped as follows:

- As economies develop, the resulting employment gains force outsourcing or offshoring of unskilled, labor-intensive activities in the value chain to developing countries.
- With strong trade linkages, intermediate goods are transported in large quantities from the developing country (often with an equivalent import of sub-components or raw materials).
- The growth in cargo movement results in opportunities in infrastructure development, which further enhance the potential for trade in intermediate goods.
- Over time, improvement in cost and technological competitiveness (driven by survival in global markets) lead to upstream and downstream integration in some large firms within the developing country.

With a focus toward increasing the country’s trade in East Asian and Southeast Asian economies, India’s short term objectives could be efficiently met by engaging in Asia’s GPN trade. As an emerging market, India has shown a consistent rise in its share in the global trade. In 2000, India’s trade value was $91 billion, worth 0.7% of the global trade. This rose to $614 billion in 2015, or 2% of the global trade. India’s contribution to Asia’s trade has also been rising. In 2000, India’s share in Asia’s trade value was 2%, which rose to 6.3% in 2015.

India’s share in Asia’s GPN trade is lower compared to other countries in Asia. Countries such as Malaysia (through its electronic components manufacturing industry), Thailand (through its hard disk manufacturing industry), and Singapore (through its consumer electronics and chemicals manufacturing industry) have shown that establishing linkages with GPNs by developing competence in focused parts and components can drive economic growth and lead to the development of high-quality finished goods in the long-term. These examples from these
countries could be helpful to the manufacturing sector in their bid to increase their exports share.

3.5.2 Initiatives of GoI and GoAP

3.5.2.1 Overview of Indian Industry

India, as the second most populous country and the seventh largest economy in the world in terms of nominal gross domestic product (GDP), is poised to become the world’s third largest economy by 2030. In a bid to enhance India’s manufacturing sector share in the country’s GDP, the Government of India launched several initiatives including the Make in India initiative as well as the development of industrial corridors, National Investment and Manufacturing Zones (NIMZs), Coastal Economic Zones (CEZs), etc. The National Manufacturing Policy targets an increase in the manufacturing sector’s share of GDP from 17% in 2014–2015 to 25% in 2021–2022 by simplifying regulations, improving infrastructure, and providing incentives. The Government has approved the expansion of the mandate of Delhi Mumbai Industrial Corridor Project Implementation Trust Fund (DMIC-PITF) and re-designated it as National Industrial Corridor Development and Implementation Trust (NICDIT). NICDIT is an apex body under the administrative control of Department of Industrial Policy and Promotion (DIPP) for coordinated and unified development of the following industrial corridors:

- Delhi Mumbai Industrial Corridor (DMIC)
- Chennai Bengaluru Industrial Corridor (CBIC)
- Amritsar Kolkata Industrial Corridor (AKIC)
- Bengaluru Mumbai Industrial Corridor (BMIC)
- Vizag Chennai Industrial Corridor (VCIC)

NICDIT will support project development activities and appraisal, approval and sanction of projects as per extant delegation. It will also coordinate and monitor all central efforts for the development of Industrial Corridor projects.

3.5.2.2 Andhra Pradesh – Industrial Policy

In recent years, the state of Andhra Pradesh has been aggressively pursuing efforts to attract industrial investments. The state has developed an Industrial Policy for 2015–2020 with a vision “to make Andhra Pradesh a progressive and highly industrialized state, a state that is a centre of technology and innovation and a joyous population confident of its bright future.” The Industrial Policy set the following targets for Andhra Pradesh:

- Increase the share of manufacturing gross state domestic product (GSDP) to 15% by 2020 from 10% in 2013–2014.
- Increase the share of industrial GSDP to 25.0% by 2020 from 20.7% in 2013–2014.
- Attract an investment of ₹2 trillion by 2020.
- Generate employment opportunities for an additional 1 million people by 2020.

3.5.2.3 Andhra Pradesh – Investment Policy

A key focus area to drive investments in Andhra Pradesh was to provide the most stable business environment in the country. The State Government took up various initiatives towards achieving this objective. The Single Desk Portal was introduced in 2015 through which all industrial approvals are provided within 21-days. More than 33,800 approvals have been provided through SDP. Many other reforms have been taken up such as the Public Service Delivery Guarantee Act, central inspection system for joint inspections, GIS system for industrial land availability, self-certifications for inspections, online system for instant scrutiny of building...
plans, automated tools for monitoring electricity outages, online system for processing & sanction for incentives, and various other process reengineering initiatives across departments. Further, the state also promises for 24 hours of uninterrupted power supply to investors setting up units.

The commitment of the State Government to provide the best business environment is evident from the fact that Andhra Pradesh, which was ranked 2nd in 2015 has now been ranked No. 1 amongst all Indian states for two consecutive years in 2016 and 2017 as per the Business Reform Assessment conducted by DIPP and World Bank. Andhra Pradesh also scored the highest marks on feedback from the industry, which was a component added in last year’s business reforms assessment.

Over the past 4 years, the State Government has worked in a concerted manner to build a new brand for Andhra Pradesh, with the tagline ‘India’s Sunrise State’. There have been focused investment promotion activities through domestic and international road shows across countries such as China, Japan, Singapore, South Korea, UAE, UK, Switzerland etc, which are resulting in large-scale investor interest in the State. The State has a strong pipeline of investments across sectors such as Automobile, Electronics, Food processing, Textiles, Pharmaceuticals, Chemicals & Petrochemicals, and Renewable Energy.

The State has also participated in several sector-specific investment forums in India such as World Food India, Textiles India, Make in India, India Chem, Aero India etc. and global investment forums such as World Economic Forum in Switzerland, Innoprom in Russia, Taitronics in Taiwan, Bio USA, Make in India in Sweden, Hannover Messe in Germany, etc. to promote the State and our focus sectors.

The State Government, in partnership with CII and DIPP, organized the Partnership Summit and Sunrise Andhra Pradesh Investment Meet, for 3 consecutive years – 2015, 2016 & 2017 - at Visakhapatnam. The Summits were intended to showcase investment opportunities in AP, while highlighting investor friendly policies in various sectors. Each of the Summits attracted delegates from a minimum of 40 countries every year. These Summits have seen cumulative participation of over 10,000 delegates.

1,437 MOUs have been signed at the Summits with investment potential of Rs. 13.35 Lakh Crores and employment potential of 24.60 Lakh jobs. Of these, 188 units have started commercial operation with an investment of Rs. 97,537 Crores and committed employment for 79,214 persons. 424 units are in advanced stages of implementation with an investment potential of Rs. 3.21 Lakh Crores and committed employment potential of 4.72 Lakh jobs.

3.5.2.4 East Coast Economic Corridor and Visakhapatnam - Chennai Industrial Corridor

Coastal economic corridors play a vital role in linking manufacturing centers of a country with global value chains through the country’s ports. Coastal corridors ensure integration of infrastructure, manufacturing, and trade. The East Coast Economic Corridor (ECEC) proposed to be developed between Tuticorin and Kolkata is to be India’s first coastal corridor. Its development is in line with the national objective of improving manufacturing GDP, promoting port-led industrialization, and the Act East policy, which places emphasis on cooperation between India and the Association of Southeast Asian Nations (ASEAN) in the areas of infrastructure, manufacturing, trade, skills, urbanization, smart cities, and other initiatives. The ECEC is expected to achieve its full trade potential with ASEAN by promoting a competitive industrial environment, constructing port and connectivity infrastructure, and creating jobs.

Visakhapatnam—Chennai Industrial Corridor (VCIC), is a key part of the East Coast Economic Corridor (ECEC), India’s first coastal corridor. GOI has selected the Asian Development Bank
(ADB) as the lead partner for developing the ECEC, which will run from Kolkata (in West Bengal) to Kanyakumari (in Tamil Nadu). VCIC traverses along the nine coastal districts of Andhra Pradesh. The conceptualization and development of VCIC has received major support from Asian Development Bank (ADB). ADB initiated the preparation of the Concept Development Plan (CDP) followed by a Regional Perspective Plan and Master Plan. Government of Andhra Pradesh has extended the maximum support in making the Industrial Corridor a reality. The long coastline dotted with strategic Ports such as Vizag Port, Gangavaram Port, Kakinada Port and Krishnapanam Port provide an opportunity to connect South East Asian, Far East markets thus making Andhra Pradesh as Global Logistics Hub. Andhra Pradesh is making aggressive efforts in attracting industrial investment through robust Industrial policy supported with aggressive promotion campaign. The investment brought in by KIA Motors Corporation is one of the success stories of Andhra Pradesh. The development of the VCIC is in line with ADB’s Country Partnership Strategy for India, which involves creation of jobs for the youth, enhancement of ongoing investment reforms, and improvement of infrastructure in critical areas such as energy, transport, urban services, and water.

VCIC development is also aligned with the key initiatives of the central Government of India for economic and industrial development through the Sagarmala project, the Make in India initiative, and the Act East policy.

### 3.5.3 Location Advantage/Justification

Government of Andhra Pradesh (GoAP) has proposed to develop Vizag – Chennai Industrial Corridor (VCIC) with the financial assistance of Asian Development Bank (ADB). VCIC is a key segment of the East Coast Economic Corridor and also India’s first coastal economic corridor. VCIC is aimed at fulfilling the objectives of the Government of India, Make in India Policy which aimed to promote manufacturing activities.

APIIC has identified four (04) nodes for development of industrial corridors, i.e., Visakhapatnam Node, Kakinada Node, Gannavaram- Kanikapadu Node and Yerpedu- Srikalahasti Node. Finally two nodes one at Vizag and other at Chittoor / Srikalahasti were suggested. Andhra Pradesh Industrial Infrastructure Corporation (APIIC) played a key role in shortlisting of the nodes. APIIC has identified the lands for both the nodes.

Chittoor node has two project sites, north block site and south block site. In which, the Initial phase of start-up area is about 2770 acres (~1121 ha) has been delineated in the south block site by APIIC for the Industrial development.

#### 3.5.3.1 Salient Features of the Project Site

- It has large and contiguous land parcel suitable for industrial development
- Strategically located near to the neighboring states such as Tamil Nadu, Telangana, Chhattisgarh and Odisha and in the East Coast Economic Corridor (ECEC). The site is proximity to major consumption centers such as Chennai
- The existing industrial hubs in Sricity, Tirupati and Chennai offer synergies for industrial development
- The site is located around 95 km from Chittoor with well-endowed Social and educational infrastructure
- The strategic location of site with good transport facility offers comfortable access to site and other cities of India. The North side approach road is NH 71, an Internal road from the hinterland of the project site joins NH 71 lies outside the project site and the Secondary approach road is Tada - Srikalahasti road (SH - 4437), lies outside the southern part of the project site. Andhra Pradesh Road Development Corporation (APRDC) is planning to
develop Link road connectivity NH 71 with the Srikalahasti – Tada Road through the Start-up area

- The nearest Railway station to the project site is at Srikalahasti R.S located at 9.5 km towards W
- Tirupati airport is at a distance of 27.0 km SW and Chennai Airport is at a distance of 90 km SE
- The Nearest Port is Krishnapatnam port is at the distance of ~64 km NE from the project site, Ennore port is at the distance of ~78 km SE from the project site and Chennai port is at the distance of ~89 km SE from the project site
- Water and Power supply can be assured for the proposed IP will be met from Kandaleru Reservoir through approved the Bulk water supply project planned by APIIC aimed to provide reliable and continuous supply of water to the industrial clusters located in Nellore and Chittoor districts of Andhra Pradesh. APSPDCL is responsible for undertaking distribution of Power in Chittoor District.
- No Environmental Sensitive areas such as Wild Life Sanctuary, National parks, Critical Polluted Areas, Biospheres, etc., within 10 km radius from the proposed site.
- The land use of the site under consideration is predominantly barren/un cultivable/ wasteland (scrub land & salt affected) and partly agricultural crop/plantations, water bodies/streams/canals, mining/quarrying area and one small habitation which requires Minimal R&R

The site meets the requirement of all critical factors that are important for success of development of Industries and could be a preeminent location.

3.6 Employment Generation

Proposed development (Initial phase of start-up area is about 2770 acres (~1121 ha) is likely to generate direct employment of ~30,000 nos.

3.7 Consultant Appointed

In order to seek the funding under VCIC, APIIC need to submit a Detailed Project Report in a format suitable for seeking funding assistance from ADB and therefore appointed L&T Infrastructure Engineering Limited (L&TIEL) as Consultant for the preparation of Detailed Project Report and for Obtaining Environmental Clearance from Ministry of Environment Forests and Climate Change (MoEF and CC).
4 Project Description

4.1 Type of Project

The proposed development attracts activity 7 (c) *i.e. Industrial Estates/Parks/ Complexes/ Areas* of EIA Notification, 2006 (as amended). Proposed development is planned in an area of 2770 acres (~1121 ha), houses both Category A and B Industry and falling under Category A of EIA Notification.

4.2 Site Location

Project site is located in Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S.Puram villages in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh.

The settlements are noticed at the North east part of the project site in Routhusurumala village, Thottambedu Mandal. Those settlements are well aligned-equipped with road connectivity, elementary school and also a water tank with 20,000 litre capacity is noticed. The Sasthri nagar, a settlement with elementary school is noticed inside the delineated area, in the middle of the project site and also infront of the Axora Resources – Industry.

Axora resources Industry is under construction, strategically located at the middle of the project site. It is observed that Green ply industry, Kajaria Bathware and Floera Ceramics lies outside the project site. It is noticed that the branch canal from the main canal pass through the project site and at the southern part of the project site, Natural streams are also noticed. The stone quarries turned rain fed ponds are noticed inside the project site. The project site is surrounded by the Agriculture lands and apart from that Mango plantation and Palm trees are also noticed at the periphery of the project site.
4.3 Details of Alternative Sites

India has five major economic corridors under various stages of development. Among them is the East Coast Economic Corridor (ECEC), touted India’s first coastal economic corridor and stretches about 2,500 kilometers along the country’s eastern coast — from Kolkata in the north to Kanyakumari in the south — traversing the four states of West Bengal, Odisha, Andhra Pradesh and Tamil Nadu.

Visakhapatnam–Chennai Industrial Corridor (VCIC), is a key part of the East Coast Economic Corridor (ECEC), India’s first coastal corridor. The Visakhapatnam-Chennai Industrial Corridor Development Program (VCICDP) is proposed to support the Government of Andhra Pradesh (GoAP) for infrastructure development, and policy and institutional reforms to stimulate economic growth and employment generation. VCIC is aimed at fulfilling the objectives of the Government of India, Make in India Policy which aimed to promote manufacturing activities.

VCIC Northern part contains Visakapatnam Node where in Atchuthapuram and Nakkapalli Cluster was proposed. The following are the two locations were identified and analysed to select most suitable site location for development of industrial clusters along the VCIC southern part.

- Alternative Site 1: Thottambedu and B.N.Kandriga Mandals, Chittoor District, AP
- Alternative Site 2: Ojili Mandal of SPS Nellore District, AP

The alternative sites are shown in the Figure 4-1

![Figure 4-1: Alternative Sites](image-url)
4.4 Factors Considered for Evaluation

The following important factors were also considered in site evaluation:

- Minimise adverse Environmental and Social impacts
- Suitability of land in terms of topographical and geological aspects.
- Land shall be free from habitation, forest land agricultural activity, and archaeological/historical monuments
- Minimum Rehabilitation and Resettlement (R&R)
- Suitability for phased and integrated development
- Scope for future development
- Site slope and drainage pattern
- Proximity to state/national highway/railway line
- Proximity to sea Ports
- Evaluation in accordance with project objectives and compliance with country laws, policies and legal requirements

Table 4-1: Multi Criteria Matrix (MCM) Analysis for Alternative sites

<table>
<thead>
<tr>
<th>Detail</th>
<th>Alternative Site 1</th>
<th>Alternative Site 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Routhusurumala, Gowdamala, Kothapalem, Alathuru and B.S.Puram In Thottambedu and B.N.Kandriga Mandals of Chittoor District, AP</td>
<td>Kundam, Karaballavolu, Machavaram, Karuru and Manavallin villages in Ojili Mandal of SPS Nellore District, AP</td>
</tr>
<tr>
<td>Latitude</td>
<td>13°44'55.20&quot;N</td>
<td>13°56'46.43&quot;N</td>
</tr>
<tr>
<td>Longitude</td>
<td>79°47'38.75&quot;E</td>
<td>79°49'20.43&quot;E</td>
</tr>
<tr>
<td>Land Availability (acres)</td>
<td>~ 2770 Acres as Start Up area</td>
<td>~ 3730 Acres</td>
</tr>
<tr>
<td>Land Use</td>
<td>The land use of the site under consideration is predominantly barren/un culturable/ wasteland (scrub land etc..) and partly agricultural crop/plantations, water bodies/streams/canals, abandoned mining/quarrying area and habitations</td>
<td>The landuse at the site primarily falls in the category of wastelands (scrubs land – dense &amp; open scrub) followed by single crop agricultural land water bodies/streams/canals and habitations.</td>
</tr>
<tr>
<td>Road</td>
<td>• NH - 71 N – 3 km N • NH-16 (AH 45) – 15.0 km E</td>
<td>• NH 5 - 6 km East • SH 61 – 6.0 km SE</td>
</tr>
<tr>
<td>Railway Line (in km)</td>
<td>Srikalahasti R.S – 9.5 km West</td>
<td>Chennai – Howrah trunk rail line - 5.5 km East</td>
</tr>
<tr>
<td>Seaports (in km) (Aerial distance)</td>
<td>• Krishnapatnam port - ~70 km • Ennore port - ~80 km • Chennai port - ~90 km</td>
<td>• Krishnapatnam port - ~45 km • Ennore port - ~95 km • Chennai port - ~105 km</td>
</tr>
<tr>
<td>Airports (in km) (Aerial distance)</td>
<td>Tirupati – 27 km; Southwest Chennai – 90 km; Southeast</td>
<td>Tirupati – 43km; Southwest Chennai – 115 km; Southeast</td>
</tr>
<tr>
<td>Reserve Forest</td>
<td>No Reserve Forest are noticed within 3.0 km.</td>
<td>Attivaram RF abutting</td>
</tr>
<tr>
<td>River</td>
<td>Swarnamukhi River ~ 6.0 km N</td>
<td>Swarnamukhi River ~ 4.5 km E</td>
</tr>
<tr>
<td>R&amp;R</td>
<td>Minimal (&lt; 35 Households) for Start up Area</td>
<td>More compare to Site 1 (&gt;35 Households)</td>
</tr>
<tr>
<td>Land Acquisition Issues</td>
<td>Less (as the lands are mostly DKT and Government lands and less patta lands)</td>
<td>Moderate compare to Site 1 (as government land is ~56% and Private land is 44%)</td>
</tr>
<tr>
<td>Expansion Possibilities</td>
<td>South block site Expandable to 14863 acres</td>
<td>No Contiguous land and expansion involves more R&amp;R or Disturbance to existing settlements and Forest lands</td>
</tr>
<tr>
<td>Sensitive Areas such as National Parks/Wildlife Sanctuaries/Biospheres within 10 km Radius</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Natural Hazards</td>
<td>As per the map prepared by Ministry of Urban Development and Poverty Alleviation, the project site is falling in Wind and Cyclone Moderate damage Risk Zone (39 m/s) and Earth Quake Medium Damage Risk Zone and No Flood Zone.</td>
<td>As per the map prepared by Ministry of Urban Development and Poverty Alleviation, the project site is falling in Wind and Cyclone Vey High damage Risk Zone (50 m/s) and Earth Quake Medium Damage Risk Zone and No Flood Zone.</td>
</tr>
</tbody>
</table>
Considering the less natural hazard prone, sufficient Land availability including scope for future expansion, Minimal R&R and land acquisition issues, Involvement of Barren Barren/Uncultivable/Waste land, Better connectivity, sufficient away from river and without ESA, Site 1 (Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S.Puram In Thottambedu and B.N.Kandriga Mandalos of Chittoor District, AP) has been selected for the Development of Project.

Some of the important features of the Site making it suitable for development are presented below:

- It has large and contiguous land parcel suitable for industrial development
- Strategically located near to the neighboring states such as Tamil Nadu, Telangana, Chhattisgarh and Odisha and in the East Coast Economic Corridor (ECEC). The site is proximity to major consumption centers such as Chennai
- The existing industrial hubs in Sricity, Tirupati and Chennai offer synergies for industrial development
- The site is located around 95 km from Chittoor with well-endowed Social and educational infrastructure
- The strategic location of site with good transport facility offers comfortable access to site and other cities of India. The North side approach road is NH 71, an Internal road from the hinterland of the project site joins NH 71 lies outside the project site and the Secondary approach road is Tada - Srikalahasti road (SH - 4437), lies outside the southern part of the project site. Andhra Pradesh Road Development Corporation (APRDC) is planning to develop Link road connectivity NH 71 with the Srikalahasti – Tada Road through the Start-up area
- The nearest Railway station to the project site is at Srikalahasti R.S located at 9.5 km towards W
- Tirupati airport is at a distance of 27.0 km SW and Chennai Airport is at a distance of 90 km SE
- The Nearest Port is Krishnapatnam port is at the distance of ~70 km NE from the project site, Ennore port is at the distance of ~80 km SE from the project site and Chennai port is at the distance of ~90 km SE from the project site
- Water and Power supply can be assured for the proposed IP will be met from Kandaleru Reservoir through approved the Bulk water supply project planned by APIIC aimed to provide reliable and continuous supply of water to the industrial clusters located in Nellore and Chittoor districts of Andhra Pradesh. APSPDCL is responsible for undertaking distribution of Power in Chittoor District.
- No Environmental Sensitive areas such as Wild Life Sanctuary, National parks, Critical Polluted Areas, Biospheres, etc., within 10 km radius from the proposed site.
- The land use of the site under consideration is predominantly barren/un cultivable/wasteland (scrub land & salt affected) and partly agricultural crop/plantations, water bodies/streams/ canals, mining/quarrying area and one small habitation which requires Minimal R&R

The site meets the requirement of all critical factors that are important for success of development of Industries and could be a preeminent location.

4.5 Size or Magnitude

In terms of area of the project, as discussed earlier, the magnitude of the site is 2770 acres. The detailed project cost will be estimated after finalization of Detailed Master Plan and the Project Development Plan. However, the tentative project cost estimated for development infrastructure in the project site is ~INR. 466 Crores.
4.6 Resources Availability and Optimisation

4.6.1 Water Availability & Source

The potential for industrial expansion should be carefully investigated as availability of water supply will certainly attract such industries and add to the economic prosperity of the region.

To have a reliable continuous supply of surface water for the Industries, Source of water was decided as Kandaluru reservoir for the following industrial clusters/Industrial parks;

The following clusters were clubbed to form Southern Region, namely;

- Krishnapatnam Node (CEZ, CBIC)
- Naidupeta
- **Chittoor Node** (Yerpedu - Srikalahasti Cluster)
- IP Mambattu
- Chinnapanduru (Hero Motor Corp. & Apollo Tyres)
- SRI City

The project is yet to be grounded and is assisted with ADB funding under Visakhapatnam Chennai Industrial Corridor Development Programme - Project 2.

Total One time water demand for the project is ~18 MLD. Considering the reuse of ~10 MLD of treated wastewater, the net water demand is ~8 MLD.

The water requirement for the start-up area will be met from the Bulk water supply project planned by APIIC aimed to provide reliable and continuous supply of water to the industrial clusters located in Nellore and Chittoor districts of Andhra Pradesh.

The tapping point for the project is near Pallamala village where water storage structures i.e., GLBR and OHSR were proposed. The pipe line length from the structure is approx. 1.60 Km along the proposed APRDC road from the boundary of startup area. The demand considered for the Phase-I developable area of south block is approx. 19.00 MLD in the bulk water supply scheme.
The Telugu Ganga project (TGP) is a water supply scheme, also known as the Krishna Water Supply Project, the purpose of the water scheme is to provide drinking water to the Chennai city. The TGP main canal lies outside the project site. It is observed that water tapped from the main canal through the branch canal.

![Figure 4-2: Tentative Tapping Point on Bulk Water Supply Line](image)

### 4.6.2 Energy/Power & Source

Chembedu substation of 33/11 kv is observed at the north part of project site, along the National highway - NH 71 and Palamala Substation 33/11 kv is at the southern part of the project site along the Chennai road (Srikalahasti to Tada). APTRANSCO, Electrical substation of 132/33 KV is observed at Srikalahasti town, along the Chennai road. Rachagunneri substation of 220/ 132 KV capacity is noticed at Yerpedu Mandal, west of Srikalahasti.
Figure 4-3: Locations of Existing Sub Stations

APTRANSCO, Electrical substation of 132/33 KV in Srikalahasti
Chembedu, Electrical substation of 33/11 KV in Neleballi
4.6.3 Wastewater Management

The estimated Industrial wastewater generation is about 6.45 MLD and total sewage will be about 3.89 MLD. The Start-up area will have a common facility for treating the industrial and domestic wastewaters (STPs/CETPs). The wastewater characteristics of the individual sectors will be analysed and based on the compatibility with other sectors treatment facility shall be conceptualised. Possibility of combining and treating the Industrial area sewage and industrial wastewater will also be analysed. The treated wastewater shall be recycled and reused in the system. Industries willing to have their own treatment facilities for effluent and sewage shall be developed by the industry in their premises. The sewage generated (2.77 MLD) at residential area will be treated in STP which will be developed on modular basis.

4.6.4 Solid Waste Management

MSW is estimated to be ~15 TPD. Municipal waste in the form of canteen waste, commercial wastes from operations will be generated. Disposal of these wastes will be carried out as per prevailing norms. Details regarding quantifications, collection, handling and disposal/management shall be covered in the EIA Report.

Total industrial solid waste generation is estimated to be about 102 TPD which includes hazardous and non–hazardous solid waste. Hazardous waste will be sent to new TSDF near Raviguntapalli, Nellore which 60 km north of the start-up area. Industries shall follow Hazardous and Other Waste (Management and Transboundary Movement) and amendment thereof, 2016. Non-hazardous industrial waste consists of recyclable and non-recyclable waste. Biodegradable waste will be mixed with MSW and will be given to approved vendors. Other
recyclable waste will be sent to nearest recycling facility, if any for reuse. The details and
disposal methods will be further evaluated during detailed engineering stage. Industrial e-waste
will be handled and disposed as per the prevalent rules.
5 Site Analysis

5.1 General

The site analysis is summarised in the following and explained in the following subsections.

Table 5-1: Site Information Summary

<table>
<thead>
<tr>
<th>S. No</th>
<th>Details</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Location</td>
<td>Thottambedu and B. N. Kandriga Mandals</td>
</tr>
<tr>
<td>2.</td>
<td>District</td>
<td>Chittoor</td>
</tr>
<tr>
<td>3.</td>
<td>State</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>4.</td>
<td>Topography</td>
<td>Varied between 30 m and 60 m above MSL</td>
</tr>
<tr>
<td>5.</td>
<td>Temperature(^3)</td>
<td>• Mean Daily Maximum: 34.5 °C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mean Daily Minimum: 23.7 °C</td>
</tr>
<tr>
<td>6.</td>
<td>Wind Speed</td>
<td>• The predominant wind direction is south-west</td>
</tr>
<tr>
<td>7.</td>
<td>Rainfall</td>
<td>• Annual rainfall: 1133.9 mm</td>
</tr>
<tr>
<td>8.</td>
<td>Relative Humidity</td>
<td>• Maximum: 80%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Minimum: 36%</td>
</tr>
<tr>
<td>9.</td>
<td>Present Land use</td>
<td>The land use of the site under consideration is predominantly barren/un culturable/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wasteland (scrub land etc.,) and partly agricultural crop/plantations, water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bodies/streams/canals, mining/quarrying area and habitations.</td>
</tr>
<tr>
<td>10.</td>
<td>Seismicity</td>
<td>The study area falls in Seismic Zone-III (Moderate Intensity Zone)</td>
</tr>
<tr>
<td>11.</td>
<td>Nearest Road Connectivity</td>
<td>The project site is connected to NH-71 which is located at a distance of ~3.0 km</td>
</tr>
<tr>
<td>12.</td>
<td>Nearest Rail Connectivity</td>
<td>Nearest railway station is at Srikalahasti at a distance of 9.5 km</td>
</tr>
<tr>
<td>13.</td>
<td>Nearest Seaport</td>
<td>Nearest seaport is Krishnapatnam port at a distance of ~64 km</td>
</tr>
<tr>
<td>14.</td>
<td>Nearest Airport</td>
<td>Nearest airports are Tirupati at a distance of ~27 km and Chennai Airport is at a distance of ~90 km</td>
</tr>
</tbody>
</table>

15. Nearest Town/ Village

The nearest villages are:
- Sivarampuram – 100 m; N
- Medipalagunta – 50 m; E
- Alathura – 800 m; E
- Kothapalem – 230 m; S
- Goudamala – 600 m; W
- B. S Puram – 905 km; W
- Routhusaramala – 30 m; N
- Reddigunta – 295 m; SE
- Basavannagunta – 203 m; S

Sastriyanadhi settlement inside the Project Boundary. Nearest town is Srikalahasti at a distance of ~6.8 km.

16. Hills/Valleys

Nil

17. Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value

- Sri Perumalasswamy Temple, Thondamanadu - 12.1 km-SW
- Megalithic Burials Complex, Ulchuru-12.6 km-E
- Seshachalam Biosphere Reserve 19 km-W

\(^3\) Source for Temperature, Wind Speed, Rainfall and Relative Humidity Data: IMD station, Tirupati
<table>
<thead>
<tr>
<th>S. No</th>
<th>Details</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>National Parks/ Wild Life Sanctuaries</td>
<td>Nil</td>
</tr>
<tr>
<td>19.</td>
<td>Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests</td>
<td>Anjur R.F- 3.2 km -S&lt;br&gt;Ugumudi R.F- 6.3 km-ESE&lt;br&gt;Mangalampadu R.F- 13.6 km-ESE&lt;br&gt;Udupudi R.F- 7.5 Km -NE&lt;br&gt;Venumbaka R.F- 9.4 km -NE&lt;br&gt;Ekol R.F- 13.8 km -NE&lt;br&gt;Rosanuru P.F - 12.3 km-N&lt;br&gt;Perimidi R.F- 9.6 km -N&lt;br&gt;Sangavaram R.F - 15.0 N&lt;br&gt;Kasaram R.F- 11.1 km - NNW&lt;br&gt;Kalavalapudi R.F- 14 km-NNW&lt;br&gt;Ramapuram R.F-10 km -S&lt;br&gt;Seshachalam Biosphere Reserve 19 km-W</td>
</tr>
<tr>
<td>20.</td>
<td>Defence Installations</td>
<td>Nil</td>
</tr>
<tr>
<td>21.</td>
<td>State, National boundaries</td>
<td>Nil</td>
</tr>
<tr>
<td>22.</td>
<td>Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)</td>
<td>Srikalahasteeswara swamy temple- 7.6 km -W&lt;br&gt;Sri Perumallaswamy Temple, Thondamanadu - 12.1 km-SW</td>
</tr>
</tbody>
</table>

### 5.2 Topography

The majority of the project site falls on ridge line and the elevations are varying overall from 30 to 60 m terrain is not flat, undulations are noticed. Higher terrains are noticed at the North West part of the project site and the lower terrains are noticed at the south east part of the project site.

### 5.3 Existing Connectivity

#### 5.3.1 Road connectivity

The North side approach road is NH 71, an Internal road from the hinterland of the project site joins NH 71 lies outside the project site and the Secondary approach road is Tada - Srikalahasthi road (Chennai road), lies outside the southern part of the project site. The APRDC is contemplating the augmentation of existing internal road, connecting NH 71 and Chennai road via project site and DPR is already in place for expansion of existing internal road of 3 metre wide to 2 lanes with paved shoulder. Once, proposed internal road inside the project site comes into the picture, it will reduce the travel time of thousands of commuters.

The project site is connected to various parts of the nation through several National Highways such as, NH-565 and NH-716 lies at the west of the project site in Renigunta and NH-71, lies at the north of the project site and whereas, NH 16 lies at the east of the project site in Naidupeta. There is a proposal to expand the NH 71 to fetch the future traffic and Industrial development.
5.3.2 Rail Connectivity
The nearest railway station is Srikalahasti Railway station is at the distance of 9.5 km from the project site, Renigunta railway station is approximately, at the distance of 31 km and Naidupeta railway station is at the distance of 19 km from the project site.

5.3.3 Air connectivity
The Nearest International Airport is Tirupati airport is at the distance of about 27 km from the project site, Chennai airport is around 90 km from the project site, and Bengaluru airport is about 300 km from the project site.

5.3.4 Port connectivity
The India’s largest and busiest port is identified near to the project site, the Nearest Port is Krishnapatnam port is at the distance of 64 km from the project site, Ennore port is at the distance of 80 km (approx.) from the project site and Chennai port is at the distance of 90 km (approx.) from the project site.

5.4 Land Ownership

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Mandal</th>
<th>Name of the Village</th>
<th>Govt land</th>
<th>Ex-gratia / compensation payable for</th>
<th>Total developable area in acres</th>
<th>Undevelopable area in acres (streams &amp; canals)</th>
<th>Total area in acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>DKT</td>
<td>PATTA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a</td>
<td>b</td>
<td>a+b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOUTH BLOCK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Thottambedu</td>
<td>Routhsurmala</td>
<td>407.90</td>
<td>683.80</td>
<td>49.12</td>
<td>1140.82</td>
<td>34.59</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Gowdamala</td>
<td>52.34</td>
<td>52.34</td>
<td>20.80</td>
<td>73.14</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Kothapalem</td>
<td>587.61</td>
<td>146.56</td>
<td>734.17</td>
<td>330.39</td>
<td>1064.56</td>
</tr>
<tr>
<td>4</td>
<td>B.N.Kandriga</td>
<td>Alathuru</td>
<td>84.00</td>
<td>287.93</td>
<td>371.93</td>
<td></td>
<td>371.93</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>B.S.Puram</td>
<td>22.82</td>
<td>22.82</td>
<td>22.82</td>
<td></td>
<td>22.20</td>
</tr>
<tr>
<td>TOTAL ::</td>
<td>491.90</td>
<td>1634.50</td>
<td>195.68</td>
<td>2322.08</td>
<td>385.78</td>
<td></td>
<td>2707.86</td>
</tr>
</tbody>
</table>

Land details yet to be collected 62.60
Total Startup Area 2770.46

Note 1: Land in possession of APIIC is 653.68 acres. The balance land is under progress of acquisition as per prevalent Land Acquisition Act/ Rules in the state and country.

Note 2: The extent mentioned under undevelopable area (under stream and canals) is tentative and will be finalised after the receipt of certified land details of canal and stream. Accordingly, total developable area may also vary and the exact details will be provided in the EIA report.
5.5 Existing Land use Pattern

The existing land use covering 15km radius from the Startup area is arrived through analysis of land use and land cover map prepared by National Remote Sensing Centre (Bhuvan – Indian geo Platform of ISRO) and output of the same is provide below.

![Land Use Covering 15.0 km Radius from Project Site](image)

Figure 5-1: Land Use Covering 15.0 km Radius from Project Site

The land use of the site under consideration is predominantly barren/un culturable/ wasteland (scrub land etc.,) and partly agricultural crop/plantations, water bodies/streems/canals, mining/quarrying area and habitations. Clearance of vegetation and buildings shall be carried out as per project requirement. There is one small scale industry (Axora), Settlement (Sasthriyanadhi) is falling within the proposed area. Maintaining the industry as it is by Integrating in to Master Plan and Relocation of the Sasthriyanadhi settlement is being planned which envisages clearance of existing pucca houses, huts and other structures including elementary school, ground tank, open well etc.
5.6 Soil Classification
The major portion of the project site and its surroundings is covered by red soils.

5.7 Climatic Data

5.7.1 Climatic Conditions
Tropical climate is observed in the project area. The normal annual mean minimum and maximum temperatures are 18°C and 46°C respectively. The normal annual rainfall is 918.1 mm. The district receives maximum rainfall during south-west monsoon period. On average the district receives 438.0 mm of rainfall through the South West Monsoon (From June to September) and 396.0 mm from North East Monsoon (From October to December).

5.7.2 Wind Direction
The predominant wind direction is from South West followed by North East direction.

5.7.3 Flooding Zone
The project area does not fall under area prone to flooding.

5.8 Social Infrastructure
Srikalahasti is a Municipality city in district of Chittoor, Andhra Pradesh which is divided into 17 wards. The population of the municipality is 80,056 of which 38,995 are males while 41,061 are females as per Census India 2011. The number of households are 19,619.

Population of Children with age of 0-6 is 8224 which is 10.27 % of total population of Municipality. Female Sex Ratio is of 1053 against state average of 993. Moreover Child Sex
Ratio in Srikalahasti is around 946 compared to Andhra Pradesh state average of 939. Literacy rate is 78.66 % higher than state average of 67.02 %.

Out of total population, 27,927 were engaged in work or business activity of which 21,728 were males while 6,199 were females. Out of the total working population, 77.60 % were engaged in Main Work while 22.40 % of total workers were engaged in Marginal Work.

Primary schools are available in all the villages. Government middle and secondary schools are available in few of the villages. Nearest senior secondary school and arts and science degree colleges is only available at Srikalahasti. Srikalahasthi has educational institutions ranging from elementary schools to engineering and degree colleges. Renigunta and Tirupati have Government PHC whereas few villages have Government Sub-PHCs.

### 5.9 Existing Drainage Pattern

The Project site falls and its surrounding in East flowing rivers between Pennar and Cauvery. Its coverage extends to three states – Karnataka, Andhra Pradesh and Tamil Nadu. The complete site falls in Ponnaiyar Sub Basin. The 10km radius buffer of the Project site is encompassed in four watersheds – C18PAL40, C18PAL41, C18PAL42 and C18PAL43. Except for C18PAL42 the rest of the watershed divides don’t fall in the Project site and no existing drainage inter connections between them was observed.

![Legend](image)

The complete site falls in Ponnaiyar Sub Basin. The drainage flows in the project site from North to South direction constituting of multiple natural drains varying in order and few distributary canals.
Kalangi River flows along the southern side of the project site at an approximate distance of 1km. It river continues its course to join into Pulicat lake. In the Northern side of the Project site at a distance of 6km River Swarnamukis banks can be reached which continues to flow in Bay of Bengal. None of the watersheds of Swarnamuki River are in the Project site.

Figure 5-2: Drainage pattern
6 Planning Brief

6.1 Planning Concept/Design Basis/Planning Considerations

A state-of-the-art Master Plan incorporating holistic and sustainable development concepts is conceptualised. Those are:

- Long term vision with focus on international competence
- Focus on integrated infrastructure
- Optimal utilisation of available land and flexibility in plot division owing to the shape of the project site
- Explore synergies of co-existence
- Traffic management
- Disaster management
- Inclusion of social infrastructure – part of non-processing zone
- Integration of operation and management aspects

Such an approach shall ensure that various stake holders of the project as well as the environment are benefited.

6.2 Planning Consideration

Planning for the proposed developments is carried out based on the concept of zoning. Zoning of area for industrial use, utilities, entrance and exit, access roads, other support services, etc. is done based on the following.

Synergy with landuse: The existing and proposed land use around project site was considered to propose within the site. In order to reduce the impact on the surrounding settlements, compatible activities are proposed around it. On the southern boundary of the project site canal is passing hence no activities are proposed in the vicinity of them based on the guidelines. Also adequate buffers are left for the existing HT line passing through the site. The site has undulating terrain sloping towards the south and north-east. These topographical aspects were considered for water, wastewater and storm water management.

Traffic Management: The already existing roads were taken into consideration while planning and proposing the internal road network. Alternate entry exit is provided for emergency evacuation.

Wind Direction: The predominant wind direction is south-west, which was taken into consideration during the zoning of industries. This aspect has an important role to decide the location for the residential and the industrial areas.

Guidelines and local Bylaws: Planning principals and local bylaws are referred for master planning the Industrial Cluster. Adequate buffers are left for existing surrounding features like canal, settlement, HT line, etc as per as per GoAP G.O.Ms.No.168. Green buffer are left along the project boundary and between different activities within the cluster.

Sustainable Development: Multiple open spaces are provided to serve as lung space in the cluster. The planning of cluster is done to have maximum flexibility which is required to adapt to any business scenario. Master plan is flexible to allow for any amalgamation in plotting (size-wise, orientation-wise, etc) from smaller to larger and visa-versa based on the requirements.

Resource Management: Cluster is planned with water recycling, waste management, rain water harvesting, use of non-renewable energy, etc for efficient use of resources.
6.2.1 Type of Industry
The project is development of Chittoor South Cluster Startup Area (Industrial Park) in an area of about 2770 acres.

6.2.2 Facilities
Start-up area will focus on necessary facilities which needs to be provided based on the proposed Industrial sectors and also the supporting facilities such as logistics and R&D industries; Sub stations; Water tank; Solid waste management treatment plant; CETP; STP; Roads; Utilities; Green Plots/Buffer; Mixed Use etc.,

6.2.3 Transportation
The products manufactured at start-up area will be marketed through Chennai and major metropolitan cities of South India (within 500 km radius). The multi modal transport connectivity is noticed around the project site, the node is accessible to Tirupati international airport on the west, Krishnapatnam in the north and Durgarajupatnam port in the east within a 50km radius. These Multi modal transport gateways are interconnected with national highways, state highways and regional rail network. The total traffic generated from the proposed start-up area will be estimated and will be provided in the EIA report.

6.3 Population Projection
Projected residential population of the project site is 23325 (considering, 100 persons per acre). Project site will make huge potential of employment for skilled and unskilled workers. The total employment generation due to the proposed project can be primarily divided into two categories, Employed population of 23325 and Floating Population of 5308. Total population including Residential and Employed is 55165.

6.4 Land use Planning
The land identified is of 2770 acre, in which developable area or Area Acquired/to be acquired is 2390.71 Acres and remaining 379.75 Acres (Tentative) is under Canals/Streams. The developable areas is further classified in to the following
- Saleable area is 68.3% of total Developable area
- Area under Infrastructure (Roads, Substation, WTP, CETP, Etc.) is 20.70 % of total Developable area
- Area under Water bodies is 0.40% of total Developable area
- Area under Green is 10.70%

The Industrial area in the entire project area occupies an area of 1380.29 acres which is 57.7% of the entire area. This area occupies the industrial plots. Detailed Land use plan is given in Table 7-1.

6.5 Assessment of Infrastructure Demand
The major infra requirement for the proposed IP and its assumptions are as follows

6.5.1 Water
The assumptions considered to estimate the water requirement for the proposed IP is as follows.
- For Industrial area 6.0 KL/acre/day
- For Logistic hub area 3.0 KL/acre/day
- Residential density in Residential Area - 100 Persons per Acre
- Employment density - 15 Employees per Acre
- Floating population assumed at 20% of Employees
- Demand for Residential 135 lpcd
- Demand for Employees 45 lpcd
- Demand for Floating 15 lpcd
- Firefighting demand - 100 * Sqrt(P); P in thousands
- For Green area & Open Spaces 5.0 KL/acre/day
- Treatment and Transmission loss assumed at 5% for Potable water

6.5.2 Power
The assumptions considered to estimate the power requirement for the proposed IP is as follows.
- For industrial area 60 kVA/acre
- For CFC, Logistics & NP area 25 kVA/acre
- For utilities 40 kVA/acre
- For green area & O.S. 0.2 kVA/acre

6.5.3 Wastewater
The assumptions considered to estimate the Wastewater generation for the proposed IP is as follows.
- Industrial wastewater generation @ 75% of total water consumed
- Domestic wastewater generation @ 80% of total water consumed
- Treatment loss for Reuse water @ 10% of total water consumed

6.5.4 Solid waste
The assumptions considered to estimate the Solid waste generation for the proposed IP is as follows.
- For MSW, 0.5 kg/day/Capita is considered
- For Industrial Area (Hazardous and Non Hazardous Industrial SW) - 60 to 180 kg/ha/day is considered based on sectors proposed
- For Logistics, Amenities and Utility area - 60 to 80 kg/ha/day

6.6 Amenities/ Facilities
This will include business centre, hotels, trade facilitation centres, commercial space, office and administrative block, space for service providers, food courts, restaurants, socio-cultural facilities, fire station, police station, etc. as amenities whereas it also include central utilities like power sub-station, water supply facilities, wastewater treatment facilities, waste management facilities, cold storage, raw material bank, etc.
7 Proposed Infrastructure

Figure 7-1: Conceptual Master Plan
Table 7-1: Land use Statement for Start-up Area

<table>
<thead>
<tr>
<th>Land Use Classification</th>
<th>Area in Acres</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undevelopable land</td>
<td>379.75*</td>
<td></td>
</tr>
<tr>
<td>Area under Irrigation Canal</td>
<td>75.57</td>
<td></td>
</tr>
<tr>
<td>Government land under Natural Drains/Streams and Porambokku Land</td>
<td>294.7674</td>
<td></td>
</tr>
<tr>
<td>Water Body (Sy.No 130)</td>
<td>9.41</td>
<td></td>
</tr>
<tr>
<td><strong>Net area acquired and under acquisition</strong></td>
<td><strong>2390.71</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Saleable Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industries</td>
<td>1380.291</td>
<td>57.7%</td>
</tr>
<tr>
<td>Logistics</td>
<td>35.2641</td>
<td>1.5%</td>
</tr>
<tr>
<td>Commercial</td>
<td>40.26507</td>
<td>1.7%</td>
</tr>
<tr>
<td>Residential</td>
<td>176.1774</td>
<td>7.4%</td>
</tr>
<tr>
<td><strong>Sub-total Saleable area</strong></td>
<td><strong>1631.997</strong></td>
<td><strong>68.3%</strong></td>
</tr>
<tr>
<td><strong>Infrastructure (Roads, Substation, WTP, CETP, Etc.)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roads</td>
<td>388.0582</td>
<td>16.2%</td>
</tr>
<tr>
<td>Parking</td>
<td>7.291836</td>
<td>0.3%</td>
</tr>
<tr>
<td>Pathway</td>
<td>22.18648</td>
<td>0.9%</td>
</tr>
<tr>
<td>Utilities</td>
<td>56.25213</td>
<td>2.4%</td>
</tr>
<tr>
<td>Amenities</td>
<td>21.1595</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>Subtotal of Infrastructure</strong></td>
<td><strong>494.9482</strong></td>
<td><strong>20.7%</strong></td>
</tr>
<tr>
<td><strong>Area under Water Bodies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal of Area under Water Bodies</strong></td>
<td><strong>8.593778</strong></td>
<td><strong>0.4%</strong></td>
</tr>
<tr>
<td><strong>Area under Green</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green/ Open Spaces</td>
<td>91.9855</td>
<td>3.8%</td>
</tr>
<tr>
<td>HT Buffer</td>
<td>29.41355</td>
<td>1.2%</td>
</tr>
<tr>
<td>Plantations</td>
<td>47.60524</td>
<td>2.0%</td>
</tr>
<tr>
<td>Green Belt</td>
<td>76.73064</td>
<td>3.2%</td>
</tr>
<tr>
<td>Canal Buffer</td>
<td>9.44</td>
<td>0.4%</td>
</tr>
<tr>
<td><strong>Subtotal of Area under Green</strong></td>
<td><strong>255.17</strong></td>
<td><strong>10.7%</strong></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>2390.71</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*As per drawings the Government land extent under canal/streams/porambokku land is slightly lesser than the extent provided in the cadastral records. These areas mentioned here are tentative and will be finalised after the receipt of certified land details of canal and stream. Accordingly, total developable area may also vary and the exact details will be provided in the EIA report.
7.1 Land use

7.1.1 Industrial Area

Industrial area occupies **1380.29 acres** out of the total area **2390.71 acres** (57.70% of the total area). The Industrial area is planned along with the support infrastructure, utilities and green areas. Proposed industries are as follows,

- Building Materials Industry/Non Metallic minerals
- Electronics and Consumer Durable Industry
- Engineering Industries (Machinery/ Electrical Equipment’s/ Automobile etc.,)
- Food and Agro Processing Industry
- Apparels and Textile Industry
- Chemical and Pharma Industry
- Logistic and Ware house
- MSME (includes Leather, Plastics, wood etc.,)

7.1.2 Logistics Zone

Logistic area is strategically located next to the entry gate of start-up area accounts, **35.26 acres** (1.5% of total area). Necessary infrastructure facilities to the logistic park will be provided as per requirement.

7.1.3 Commercial Area

About, **40.26 acres** which is **1.7%** of total area (**2390.71 acres**) is proposed for commercial Area.

7.1.4 Residential Area

Residential area is placed next to the existing settlement such as Alathuru, Goudamala and Routhsurmala for **176.18 acres** which is **7.4%** of total area (**2390.71 acres**). Residential area will be facilitated with good infrastructure facility and accessibility.

7.1.5 Amenities

About, **56.25 acres** which is **0.9%** of total area (**2390.71 acres**) is proposed for Amenities. Basic amenities like ATM, Medical shops, Public rest rooms, Food and beverages, Convenience shopping and religious facilities are planned to get access by within 800 meters.

7.1.6 Utilities

About, **21.16 acres** which is **2.4%** of total area (**2390.71 acres**) is proposed for Utilities. Utilities are planned and zoned across the project site. It includes water supply system, sewage network and wastewater treatment facility, solid waste disposal facilities, power sub-station and distribution network, fire station and parking. Based on the requirement, these facilities are spread across the project site. Area allotment for utilities are finalised based on the individual infrastructure requirement.

7.1.7 Green Belt/Areas

Within the project site 255.17 acres of land is delineated for green space which is 11% of total area. Huge area of **38.85 acres** given for green buffer inside the project site includes green buffer along the canals, HT Line and also along the periphery of the project. Uniform green belt is proposed along the entire boundary as buffer area. Green areas are also proposed in the

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7 Proposed Infrastructure
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central zone as recreational facilities and breathing spaces. Proper buffer are left along the canal which meandering through the southern part of the site. In addition to this, all the industrial units shall develop green areas within their premises as per the prevailing law.

- Approximately 15 m wide peripheral green buffer provided along the boundary.
- 20 m wide buffer is provided along the canal.
- Green/open spaces provided in the central zone for recreational activities.
- Landscaping will be provided in the road medians and rotaries.

### Table 7-2: Green belt/ areas

<table>
<thead>
<tr>
<th>S. No</th>
<th>Details of Green area</th>
<th>Area in Acres</th>
<th>% of area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HT_Buffer</td>
<td>29.41355</td>
<td>1.2%</td>
</tr>
<tr>
<td>2</td>
<td>Canal Buffer</td>
<td>9.44</td>
<td>0.4%</td>
</tr>
<tr>
<td>3</td>
<td>Plantations</td>
<td>47.60524</td>
<td>2.0%</td>
</tr>
<tr>
<td>4</td>
<td>Green/ Open Spaces</td>
<td>91.9855</td>
<td>3.8%</td>
</tr>
<tr>
<td>5</td>
<td>Green Belt</td>
<td>76.73064</td>
<td>3.2%</td>
</tr>
<tr>
<td></td>
<td><strong>Area under Green</strong></td>
<td><strong>255.17</strong></td>
<td><strong>10.7%</strong></td>
</tr>
</tbody>
</table>

It is pertinent to mention that over and above all Individual industries will have 25 % area under Green and other land use such as Logistics, commercial, residential, amenities etc., will have >25% area under green.

#### 7.1.8 Entry/Exit / Internal roads network

The entire project area will have different hierarchy of roads; primary road is of 60m RoW, from the main entrance, it will act as the link road connecting NH 71 and SH 4437. Within the project site secondary and tertiary roads of 45m, 30m, 24m, 18m RoW and 12 m RoW are provided. The tentative circulation plan is shown in **Figure 7-2**.

Main entry/exit gates are provided at the northern and southern boundary connecting with the existing roads. Truck parking facility is provided near the entry to avoid any traffic block and provide space for pre and post processing of the good.
7.2 Approach Road

The North side approach road is NH 71, an Internal road from the hinterland of the project site joins NH 71 lies outside the project site and the Secondary approach road is Tada - Srikalahasti road (Chennai road), lies outside the southern part of the project site. The APRDC is contemplating the augmentation of existing internal road, connecting NH 71 and Chennai road via project site and DPR is already in place for expansion of existing internal road of 3 metre wide to 2 lanes with paved shoulder. Once, proposed internal road inside the project site comes into the picture, it will reduce the travel time of thousands of commuters. The project site is connected to various parts of the nation through several National Highways such as, NH-565 and NH-716 lies at the west of the project site in Renigunta and NH-71, lies at the north of the project site and whereas, NH 16 lies at the east of the project site in Naidupeta. There is a proposal to expand the NH 71 to fetch the future traffic and Industrial development.
7.3 Water Supply

Based on the proposed unit water demand and the proposed land use distribution & projected population, as well as other assumptions described earlier, the total water demand for overall area and start-up area has been worked out as shown in Table 7-3. Total water demands include potable water demand + recycle water demand.

Table 7-3: Projected average water demand

<table>
<thead>
<tr>
<th>S. No</th>
<th>CATEGORY</th>
<th>WATER DEMAND (MLD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INDUSTRIAL</td>
<td>9.64</td>
</tr>
<tr>
<td>2</td>
<td>DOMESTIC</td>
<td>4.42</td>
</tr>
<tr>
<td>3</td>
<td>FIREFIGHTING</td>
<td>0.74</td>
</tr>
<tr>
<td>4</td>
<td>LANDSCAPE</td>
<td>0.76</td>
</tr>
<tr>
<td>5</td>
<td>LOSSES @ 10%</td>
<td>1.56</td>
</tr>
<tr>
<td></td>
<td>WATER DEMAND</td>
<td>17.12</td>
</tr>
<tr>
<td></td>
<td>TOTAL WATER DEMAND AT SOURCE</td>
<td>18</td>
</tr>
</tbody>
</table>

Total water demand for the proposed IP is ~18 MLD but considering the reuse of ~10 MLD of treated sewage from the STP, the net fresh water demand is ~8 MLD.

7.3.1 Fire Protection Demand

The Firefighting water shall be stored in the ground level water tank. Based on the empirical formula and the population, the quantity of water required for fire protection is about 740 KL. The fire hydrant shall be located for every 5,600 sqm and/ or at the interval of 100 m. The source of firefighting water demand is potable water and the pressure supplied will be about 1.0 bar. For high-rise buildings with their pressure requirement of more than 1.0 bar, it is recommended to have their own booster pumping system to enhance the distribution pressure.

7.3.2 Proposed Water Supply Network

Both potable water and recycle water shall serve the proposed industrial Development. The water requirement for the start-up area will be met from the Bulk water supply project planned by APIIC aimed to provide reliable and continuous supply of water to the industrial clusters located in Nellore and Chittoor districts of Andhra Pradesh. This shall be conveyed to water treatment plant located within the development for treatment.

The potable water will initially be stored in the ground water tank (located within WTP) which has 24 hours storage capacity and subsequently pumped to respective catchments, each of which is served by its own elevated water tank. The elevated water tank is proposed to have the minimum storage capacity of 8 hours.

In supplying water to the proposed industrial development, gravity system of water supply & distribution systems has been considered. Generally, a gravity system comprises the ground storage facilities, pumps, elevated storage facilities, pipes and appurtenances. In a gravity
system, water will be pumped from ground storage facilities to the elevated storage facilities, which will then distribute potable water to end users by gravity. Pressure is put on the system by the height of the water in the elevated storage facilities. When water demand causes the water level in the elevated storage facilities to drop, the booster pump will be activated and excess water will be supplied to topping up to the appropriate water level. When the water level in the elevated water storage facilities reaches the cut-off limit, the pump will be cut off.

7.4 Wastewater Management

Based on the land use distribution and population projection of the various planning areas, the wastewater generation has been worked out for the proposed development.

The estimated Industrial wastewater generation is about 6.45 MLD and total sewage will be about 3.89 MLD. The Start-up area will have a common facility for treating the industrial and domestic wastewaters (STPs/CETPs). The wastewater characteristics of the individual sectors will be analysed and based on the compatibility with other sectors treatment facility shall be conceptualised. Possibility of combining and treating the industrial area sewage and industrial wastewater will also be analysed. The treated wastewater shall be recycled and reused in the system. Industries willing to have their own treatment facilities for effluent and sewage shall be developed by the industry in their premises. The sewage generated (2.77 MLD) at residential area will be treated in STP which will be developed on modular basis.

7.4.1 Proposed Wastewater System

Wastewater network being primarily a gravity network (subject to detailed soil investigation and actual soil conditions at site) is dependent on the topography of the area. Higher terrains are noticed at the North West part of the project site and the lower terrains are noticed at the south east part of the project site. The ground elevation of the site decreases towards southern direction.

7.5 Storm water Management

The proposed drainage scheme consists of the following.

7.5.1 Storm Water Collection and Conveyance System

The collection and conveyance system comprise the road side drains and the outlet drains. The main function of these drains is to collate all the surface runoff from the land plots and carriageway and release to the nearest existing water body such as pond or river. The road side drain shall be closed rectangular concrete drain which doubles as the footpath on the side table of the road. The proposed storm water drainage system caters only for the surface runoff generated within industrial development. Thus, if necessary cut-off drains need to be provided along the development boundary to divert the outside runoff.

7.5.2 Discharge System

The storm water drainage discharge system comprises of discharge outlet drain and existing water body such as pond or river. The storm water discharge points are identified at the lowest points and by doing so, the drainage flow pattern will be adhered closely to the existing terrain profile.

Discharge outlet drains are normally wider and open trapezoidal/ rectangular concrete drains are usually adopted. However, in the sustainable drainage scheme, these drains can still be open canal with nice landscape integrated with the canal wall. The drainage system for all the new
proposed development shall be independent from the existing drainage system in order not to load the existing system.

7.5.3 Sustainable Features
Traditionally, surface runoff enters into the road side drain directly without any treatment, detention or retention within each development site. However, in the sustainable drainage scheme, surface runoff will be retained, detained and treated by the various treatment features such as roof garden, vegetated swales, bioretention swales, bioretention basins, sedimentation basin and constructed wetland etc. meant to serve the purpose of purification, detention, retention, conveyance and infiltration.

7.5.4 Solid Waste Management (MSW/ISW)
The proposed industrial development will result in generation of sizable amount of solid waste due to industrial activities. Effective disposal of this waste will be a major challenge in order to make the development more attractive, habitable and environmentally friendly.

This chapter analyses the solid waste to be generated and to reduce the quantity of solid waste disposal by increasing the recycle rate of solid waste. The development of the project site with diverse urban and industrial activities results in generation of various types of solid wastes. Classification of the solid wastes is necessary as the handling of different composition of waste will require special efforts and careful planning. Potential solid wastes generated are broadly classified into two categories;

(i) Municipal Solid Waste
Municipal solid waste comprises the residential, commercial and industrial wastes generated in project site in either solid or semi-solid form excluding industrial hazardous wastes. The majority types of municipal solid waste are food wastes, paper, plastic, rags, metal and glass, with some hazardous household wastes such as electric light bulbs, batteries and automotive parts.

(ii) Industrial Hazardous Solid Wastes:
With increase in industrial activities, the amount of hazardous waste generated will increase. The wastes in this category are the discarded solid material of manufacturing processes and industrial operations, sludge from effluent treatment plant. They cover a vast range of substances which are unique to each industry. It usually includes hazardous chemical wastes, electronic wastes, process waste, etc. For this reason, they are considered separately from municipal solid wastes. The industrial hazardous and toxic waste generated are required to be stored properly and disposed in an environmentally sound manner. Industries generating process solid waste have to treat according to standards specified by state environment department under relevant rules before disposing. Disposal options for these wastes involve treating the hazardous waste and neutralization followed by sanitary landfilling / incineration.

7.5.4.1 Projected Solid Waste Generation
MSW is estimated to be ~15 TPD. Municipal waste in the form of canteen waste, commercial wastes from operations will be generated. Total industrial solid waste generation is estimated to be about 102 TPD which includes hazardous and non–hazardous solid waste. Proposed Solid Waste Disposal
Disposal of MSW will be carried out as per prevailing norms. Hazardous waste will be sent to new TSDF near Raviguntapalli, Nellore which 60 km north of the start-up area. Industries shall follow Hazardous and Other Waste (Management and Transboundary Movement) and
amendment thereof, 2016. Non-hazardous industrial waste consists of recyclable and non-
recyclable waste. Biodegradable waste will be mixed with MSW and will be given to approved
vendors. Other recyclable waste will be sent to nearest recycling facility, if any for reuse. The
details and disposal methods will be further evaluated during detailed engineering stage.
Industrial e-waste will be handled and disposed as per the prevalent rules.

7.6 Power Requirement & Supply and Source

Power requirement during operation phase is estimated to be ~106MVA. It is proposed to
provide 132/33 kv substations within the project site to cater the industrial, residential,
commercial and other requirements.
8 Rehabilitation and Resettlement Plan

Relocation of the Sasthriyanadhi settlement is being planned which envisages clearance of existing pucca houses, huts and other structures including elementary school, ground tank, open well etc. the preliminary details of the same is given below.

Sastriyanadhi settlement is a tiny settlement/ hamlet, strategically located at the center of the startup area in the south cluster of Chittoor node, inside the Routhsurmala village, Thottambedu mandal in Srikalahasti.

Figure 8-1: Sasthriyanadhi settlement
Totally, 33 houses where noticed inside the sasthriyanadhi settlement, in which 15 houses are Pucca structures and 18 are huts. 15 pucca houses consists 30 dwelling units, each pucca house consist two dwelling units. All the 15 pucca houses are built under **Indira Awas Yojana (IAY)** in Sasthriyanandhi settlement. Recently, Hut no: 14 had got sanctioned for constructing new house under **NTR Housing scheme**. Sasthriyanadhi settlement lies next to BT - Village road. Two number of 3-meter, **CC-road** is noticed inside the settlement As per drone image, total area of sasthriyanadhi settlement is about 2.92 acres. The details of the houses in the Sastriyanadhi settlement are given below.

### Table 8-1: Details of Sastriyanadhi Settlement

<table>
<thead>
<tr>
<th>S.No.</th>
<th>House Type</th>
<th>Number of Houses</th>
<th>Survey No./Land Ownership</th>
<th>Number of Dwelling Units</th>
<th>Population (ST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pucca Houses</td>
<td>15</td>
<td>200 /Gram Kantam</td>
<td>30</td>
<td>94</td>
</tr>
<tr>
<td>2.</td>
<td>Huts</td>
<td>18</td>
<td>200 &amp;200 &amp;198/Gram Kantam //DKT</td>
<td>18</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>33</td>
<td></td>
<td>48</td>
<td>160</td>
</tr>
</tbody>
</table>
9 Project Schedule and Cost Estimates

9.1 Project Implementation

The project development activities are proposed to commence at the site in 30-45 days after procuring all the necessary statutory approvals in the year 2019 and is expected to be complete by the year 2020.

9.2 Cost Estimates

The detailed project cost will be estimated after finalization of Detailed Master Plan and the Project Development Plan. However, the tentative project cost is estimated at about INR 466 crores.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Summary of Physical Infrastructure Cost</th>
<th>In Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Roads</td>
<td>180.71</td>
</tr>
<tr>
<td>2</td>
<td>Water Supply (Bulk line from Tapping on industrial WS scheme, WTP, Storage and distribution Network)</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>Reuse Water supply including Storage and distribution Network</td>
<td>23</td>
</tr>
<tr>
<td>4</td>
<td>Effluent collection network</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>Sewage collection network</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Waste water treatment - CETP (6 MLD)</td>
<td>42</td>
</tr>
<tr>
<td>7</td>
<td>Waste water treatment - STP (4 MLD)</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Provision for Constructed covered storm drain cost</td>
<td>48.58</td>
</tr>
<tr>
<td>9</td>
<td>Provision for Power supply (Assumed 15 Km transmission line and 132 KV substation)</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>Provision for Rehabilitation (Including Building)</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td><strong>Sub Total</strong></td>
<td><strong>385.79</strong></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Total (in Cr)</td>
<td>385.79</td>
</tr>
<tr>
<td>B. Provision for Contingency (5%) (A x 0.05)</td>
<td>19.2895</td>
</tr>
<tr>
<td>C. Sub Total (In Cr) (A+B)</td>
<td>405.0795</td>
</tr>
<tr>
<td>D. Provision for GST (12%) (C x 0.12)</td>
<td>48.60954</td>
</tr>
<tr>
<td>E. Provision for Cess (1%) (C x 0.01)</td>
<td>4.050795</td>
</tr>
<tr>
<td>F. Provision for Unforeseen Items (2%) (C x 0.02)</td>
<td>8.10159</td>
</tr>
<tr>
<td></td>
<td><strong>Grand Total In Cr. (C+D+E+F)</strong></td>
</tr>
</tbody>
</table>

Rounded Off  466
10 Analysis of Proposal

The project site faces no significant environmental or social issues. The master plan for the project has been conceptualised in such a manner so as to reduce the environmental impacts of the project on the surrounding settlements.

The project shall bring in major investments to the region covering a wide range of sectors – connectivity, industry, social infrastructure.

The project when fully operational also brings in direct employment potential of about 30,000 persons (both residential and non-residential workforce) thereby opening up employment opportunities for the youth in the catchment region. Additionally, the induced development due to the project, definitely bound to bring in more benefits to the local population and the overall region. The proposed project will therefore immensely add to the social economic value of the region.