Initial Environmental Examination

Document Stage: Draft for Consultation
Project Number: 48434-004
December 2022

India: Visakhapatnam-Chennai Industrial Corridor Development Program - Tranche 2

Development of Internal Infrastructure in the Start-up Area of Chittoor-South Industrial Cluster

Package No: VCICDP/APIIC/06A

Prepared by Andhra Pradesh Industrial Infrastructure Corporation Limited, Government of Andhra Pradesh for the Asian Development Bank.

CURRENCYEQUIVALENTS

(As of 17 November 2022)

Currency unit	–	Indian Rupees (₹)
₹1.00	=	$ 0.012
$1.00	=	₹81.54

ABBREVIATIONS

ADB	–	Asian Development Bank
APPCB	–	Andhra Pradesh Pollution Control Board
APRDC	–	Andhra Pradesh Road Development Corporation
ATMs	–	Automated Teller Machines
BGL	–	Below Ground Level
BOD	–	Biological Oxygen Demand
BIS	–	Bureau of Indian Standard
CETP	–	Common Effluent Treatment Plant
COVID19	–	Corona Virus disease of 2019
CPCB	–	Central Pollution Control Board
DG	–	Diesel generator
DO	–	Dissolved Oxygen
DOE	–	Department of Environment
PMSC	–	Project Management and Supervision Consultant
EA	–	executing agency
EC	–	Environment Clearance
EAC	–	Expert Appraisal Committee
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
EMOP	–	Environmental Monitoring Plan
ESO	–	Environmental and Safety Officer
GOAP	–	Government of Andhra Pradesh
IEE	–	initial environmental examination
IMD	–	Indian Meteorological Department
IS	–	Indian Standard
MFF	–	Multi Tranche Financial Facility
MoEFCC	–	Ministry of Environment, Forests and Climate Change
MSL	–	Mean Sea Level
MW	–	Mega Watt
NSDP	–	Net State Domestic Product
NGO	–	Non-government organization
NH	–	National Highway
NO_x	–	oxides of nitrogen
PIA	–	Project Influenced Area
PIU	–	Project Implementation Unit
PUC	–	Pollution Under Control
PWD	–	Public Works Department
RF	–	Reserve Forest
ROW	–	right-of-way
REA	–	Rapid Environmental Assessment
PMSC	–	Project Management and Supervision Consultant
SEP	–	Site Environmental Plan
SEIAA	–	State Environment Impact Assessment Authority
SPS	–	Safeguard Policy Statement
TSDF	–	Treatment, Storage, and Disposal Facilities
TPD	–	Tones Per Day

VCIC	–	Visakhapatnam-Chennai Industrial Corridor
VCICDP	–	Visakhapatnam-Chennai Industrial Corridor Development Program
PM_{10}	–	Particulate Matter 10 micrometres
$PM_{2.5}$	–	Particulate Matter 2.5 micrometres
PIs	–	Performance Indicators
PAPs	–	project-affected persons
R&R	–	Resettlement and Rehabilitation
R&D	–	Research and Development
HC	–	Hydrocarbons
CO	–	Carbon monoxide
NH_3	–	Ammonia
UNFCCC	–	United Nations Framework Convention on Climate Change
VOC	–	Volatile Organic Compounds
OSHA	–	Occupational Safety and Health Administration

WEIGHTS AND MEASURES

dBA	–	decibels
°C	–	degree Celsius
km	–	kilometer
lpcd	–	liter per capita per day
m	–	meter
mgbl	–	meter below ground level
mm	–	millimeter
mld	–	million liters per day
km^2	–	square kilometer

NOTE

In this report, "$" refers to United States dollars.

CONTENTS

FIGURES

TABLES

EXHIBITS

APPENDICES

EXECUTIVE SUMMARY

Project Description. The Asian Development Bank (ADB) approved on 20 September 2016 a multi-tranche financing facility (MFF) worth $500 million and a policy-based loan (PBL) worth $125 million for the Visakhapatnam–Chennai Industrial Corridor Development Program (VCICDP). ADB also approved on that day technical assistance (TA) worth $1 million for Capacity Development for Industrial Corridor Management in Andhra Pradesh and, on 26 September 2016, ADB administration of a $5 million grant from the Urban Climate Change Resilience Trust Fund under the Urban Financing Partnership Facility.

The VCICDP complements ongoing Government of Andhra Pradesh efforts to enhance industrial growth and create high-quality jobs. It has three outputs: (i) corridor management strengthened and ease of doing business improved, (ii) Visakhapatnam–Chennai Industrial Corridor (VCIC) infrastructure strengthened, and (iii) institutional capacity, human resources, and program management enhanced. The MFF and grant support priority infrastructure investments in the VCIC, and the PBL and TA support policy reform and institutional development in the state. The Department of Industries and Commerce (DOIC) of the Government of Andhra Pradesh is the MFF executing agency. The implementing units are Andhra Pradesh Industrial Infrastructure Corporation (APIIC), Transmission Corporation of Andhra Pradesh, Andhra Pradesh Road Development Corporation (APRDC), and Greater Visakhapatnam Municipal Corporation (GVMC).

Impact and Outcome. The impact of VCICDP will be an increased contribution of the manufacturing sector to the state's GDP, trade, and employment. The outcome will be enhanced growth and competitiveness of the VCIC. The Program-based Loan (PBL) will support policy reforms and institutional development in the state's industrial sector (Output 1); and the multitranche financing facility (MFF – two tranches) will support priority infrastructure investments in VCIC (Outputs 2 and 3). The VCICDP will develop two industrial clusters in the Visakhapatnam node—Rambilli and Nakapalli—and two clusters in the Srikalahasti–Chittoor node: Naidupeta and Chittoor–South.

Outputs. The outputs of Tranche 2 of VCICIDP are:

(1) Output 1: Visakhapatnam industrial node infrastructure strengthened. This will (i) develop internal infrastructure in the start-up area of the 160-hectare Rambilli industrial cluster; (ii) develop internal infrastructure in the start-up area of the 441-hectare Nakkapalli industrial cluster with a bulk water transmission line; (iii) widen the 13.8 kilometer (km) Atchuthapuram–Anakapalli road with features friendly to the elderly, women, children, and persons with disabilities (EWCD) for better access to National Highway 16; (iv) improve a 4.4 km access road to the Nakkapalli cluster with EWCD-friendly features; and (v) improve awareness and knowledge among the community members including women in Rambilli and Nakapalli industrial clusters and along Atchuthapuram to Anakapalli roads. Internal infrastructure in these clusters will include roads, storm water drains, water supply systems, and electric power distribution systems. Target industries in the Visakhapatnam node include pharmaceuticals, transport equipment, electronics and information technology, and textiles.

(2) Output 2: Srikalahasti–Chittoor industrial node infrastructure strengthened. This will (i) develop internal infrastructure in the start-up area of the 938-hectare Chittoor–South industrial cluster, (ii) improve a 9.5 km access road to the Chittoor-South industrial cluster with EWCD-friendly features, (iii) improve an 8.7 km access road to the Naidupeta industrial cluster with EWCD-friendly features, and (iv) improve awareness and knowledge among the community members including women in Chittoor–South industrial cluster. Internal infrastructure in the start-up area of the Chittoor–South cluster will include internal roads, storm water drains, water supply systems, and electric power distribution systems. Target

industries in the Srikalahasti–Chittoor node include machinery, food processing, electronics and information technology, and textiles.

(3) Output 3: Sustainable, green, and integrated industrial development enhanced. This will (i) roll out an updated marketing action plan for investment promotion; (ii) enhance skills of people including socially vulnerable and economically weak people; (iii) establish green corridor model operational guidelines at industrial cluster level; (iv) develop a disaster risk management plan to strengthen industrial cluster resilience under extreme weather; (v) formulate a plan for the sustainable operation and maintenance (O&M) of start-up industrial clusters; (vi) roll out a toolkit with gender-responsive and socially inclusive guidance, to integrate industrial and urban planning including industry housing in areas adjacent to industrial clusters; (vii) prepare and implement gender mainstreaming guidelines of DOIC; and (viii) disseminate knowledge of innovative corridor program designs including gender equality and socially inclusive intervention results, to other industrial clusters across the region.

This IEE for package VCICDP/APIIC/06A pertains to the output 2 for the Visakhapatnam node for development of Start-up Area of Chittoor South Industrial Cluster.
The present IEE mainly focusses on the environmental aspects of the Start-up area.[1] This Initial Environmental Examination (IEE) is an environmental safeguard assessment report for the APIIC's Industrial Infrastructure upgradation subproject being proposed under the VCICDP. This IEE covers the VCICDP component of "Enhancing support infrastructure in industrial estates" for the proposed industrial cluster development at Srikalahasthi under Chittoor node – south cluster (start-up area).

Purpose of the Initial Environmental Examination: ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirement for environmental assessment are described in ADB's Safeguard Policy Statement (SPS), 2009. The subproject selection criteria in the MFF's Environmental Assessment and Review Framework (EARF) has been used for screening to ensure the succeeding subprojects will not be potential Category A for environment. Project 2 of the MFF is category B for environment per ADB SPS, 2009 and requires preparation of initial environmental examination (IEE) report.

This IEE[2] has prepared for Package No. APIIC/06A following the EARF, Government of India laws and policies, and ADB SPS environmental requirements. This IEE will be included in the bid and contract documents. The proposed project is listed under Schedule 1 of the Government of India's Environment Protection Act (EPA) and Environment Protection Rules (EPR) and has therefore applied for securing Environmental Clearance from the Ministry of Environment and Forest and Climate Change (MOEFCC) Government of India. The proposed project also requires to meet Government of India requirements related to prevention of pollution, occupational health and safety, and labour standards. A section on required statutory clearances is included in this IEE.

Subproject Scope: APIIC proposes to develop internal infrastructure in the start-up area of the 938-hectare Chittoor–South industrial cluster. The proposed cluster shall be connected to the national highway through a new road proposed to be constructed by APRDC under

[1]Start-up area: These Phase I developments for the industrial area are referred to as 'start up' areas. ADB's financial support under VCICDP Tranche2 pertains to development of infrastructure related to these start up areas, however APIIC has prepared the Master Plan for development of the whole area and environmental clearance from MoEFCC has been pursued accordingly

[2]This IEE has been prepared for all major infrastructure works proposed under the subproject except CETP. CETP shall be constructed by APIIC following the Design Build Operate Fund and Transfer mode after the construction of internal infrastructure (Refer Appendix 17)

project 2 of VCICDP. The bulk water supply sub project for industrial clusters in southern region of AP proposed under VCICDP project 1 shall provide bulk water supply to the cluster. The sub project proposed here shall construct (Roads, storm water drains, power distribution network, street lighting, water supply, recycle water system, green areas and green belt development, operation, and maintenance of WTP) including Environmental monitoring during construction phase. APIIC shall be the implementing Agency. The entire works shall be procured through a single works contract package.

This subproject shall have the following components: (i) 42.8 km internal road of 2/4 lane; (ii) 86 km storm water drain; (iii) water supply (distribution network, overhead storage reservoirs and 4.5 MLD water treatment plant); (iv) power supply and distribution network include 132/33 KV Substations, street lighting; (v) green areas and green belt development and operation and maintenance of WTP; (vi) Environmental and social management aspects also form a component of the project.

Future development: The ADB financial support will be confined to the components mentioned above, however, APIIC will be developing other infrastructure within the Chittoor industrial cluster using GOAP funds that will form a part of the associated facilities for this subproject. This will include additional requirements for the industrial area such as networks for roads, CETP, sewerage, electrical and water supply distribution, Treatment, Storage and Disposal Facility (TSDF), etc. EIA (Environmental Impact Assessment)[3] for the total area has been conducted by APIIC as a part of its Environment Clearance process. Environmental Clearance obtained in November 2020. APIIC will take development of remaining infrastructure and amenities after completion of works under this subproject. Subsequently, APIIC will allot vacant developed plots and factory sheds to entrepreneurs / companies for establishment of industries, allied facilities, services, commercial establishments etc., as per prevailing regulations. Industrial area local authority (IALA) established by APIIC will manage the industrial park. Member industries and service agencies will be responsible for the establishment and operations of respective units in compliance with the applicable regulations, including EIA Notification 2006, and other regulations related to air, water, noise, hazardous waste, solid waste, health and safety, labour welfare etc. Individual industries, depending on the type and scale of operation, will conduct EIA study if required and obtain EC for their individual operations, and will obtain consent to establish (CTE) and consent to operate (CFE) from APPCB. Industries will also obtain other necessary permissions and licenses and will be responsible for compliance. Hazardous waste generated from the industrial cluster will be treated and disposed at the existing Treatment, Storage and Disposal Facility (TSDF), located at 60 km from the site.

Description of the Environment. The subproject site is dominated by Scrub land and Salt Affected Land followed by cropland and fallow land, mining / quarry, and rural and water bodies. The surrounding area up to 10 km land use comprises mostly Agriculture and crop land. There are no Wildlife Sanctuaries, National Parks, Ecologically Sensitive Areas (ESA) or biosphere reserves or nesting or breeding grounds for any of the rare species or other protected areas within the project area as well as in the study area except few reserve forests of dense scrub and Open scrub. Findings from the IBAT study and biodiversity study conducted for the area confirms that the project site is not situated within or adjacent to any cultural heritage sites, protected areas, buffer zones of protected areas, or special areas for protecting biodiversity. As such the area identified for the project is not ecologically sensitive.

Potential environmental impacts and mitigation measures. The subproject is unlikely to cause significant adverse impacts because: (i) most of the individual components involve

[3] EIA study conducted for obtaining Environmental Clearance and CFE for Industrial Park at South block Srikalahasti node. TOR and EC by MOEFCC is attached as Appendix 1 and Appendix 2

straightforward construction and operation, so impacts will be mainly localized; (ii) in most cases the predicted impacts are localized and likely to be associated with the construction process at isolated locations and are produced because the process is invasive, involving excavation, obstruction at specific construction locations, and earth movements; and (iii) being located mainly along roads, open fields and built-up area will not cause direct impact on terrestrial biodiversity values. The potential adverse impacts can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Civil works will be implemented by contractors to be engaged by APIIC. The design and requirements are in accordance with Indian Bureau of Standards which follows international good practices. During construction, impacts from the earthworks, materials storage, construction wastes, workers camp/s, and disturbance to residents, businesses, and traffic are expected to be minimal. These temporary impacts are common for construction activities in urban areas, and there exist well-developed methods for their effective mitigation. Contractor and subcontractor will be required to submit a site-specific environmental management plan (SEMP) prior to start of works and to ensure: (i) earthworks will be conducted during the dry season to avoid difficult working conditions that prevail during the monsoon; (ii) stockyards are located at least 300 m away from watercourses; (iii) fuel and lubricant storage areas are located away from drainage; (iv) construction wastes are minimized and disposal facilities are identified; (v) locations of workers camps, if needed are approved by implementing agency; (vi) wastewater are prevented from entering into streams, watercourses, or irrigation channels; (vii) open burning of solid wastes is strictly prohibited and strict segregation, reuse and recycling activities within the construction site and workers camp; (viii) area sensitive receptors are factored in work schedule and construction methodology; (ix) coordinate with social safeguards team for potential disturbances to roadside shops and vendors; and (x) traffic management and road signages are coordinated with APIIC and local traffic police, and (xi) All activities of the contractor shall be conducted in accordance with COVID19 prevention and protection policy and procedures developed under the VCICDP project and as required by the GOI and GoAP laws and consistent with WHO and other international guidelines.

During operation, impacts will likely arise from repair and maintenance of the already developed infrastructure such as roads, water supply network, power distribution lines, etc. There will be potential impacts due to construction and operations of partner units[4] / industries which will be monitored by APIIC Environment Management Cell (EMC) to ensure that environmental compliance is met. Potential impacts during maintenance repair and maintenance activities are similar in nature with construction impacts but lesser duration and significance.

There will be no dependence on Ground water or other surface water sources during the operation of Chittoor node, south cluster start up area. Though the proposed development will not draw Ground water during its operation stage and the study region (about 8 mandals in 10 km radius) is falling under mostly Safe to Semi critical category, rainwater harvesting system is proposed. The domestic wastewater from the residential areas within the park shall be collected and treated separately in a STP, but this will be developed later along with development of the residential layout. During Scoping stage of EIA study, MoEFCC has recommended the Terms of Reference vide letter No: F. No. 21-76/2018-IA.III dated 4 January 2019 to carry out the EIA study by providing CETP. EIA study was conducted and obtained the Environmental Clearance (EC) from MoEFCC.

[4] APIIC will presently develop the industrial infrastructure and then invite units to set up their activities. While the type and nature of units coming in the industrial area may vary, the industrial sectors will be as approved and mentioned in the EC. APIIC EMC shall ensure that the environmental impacts from the industries during the operational phase are adequately managed and in compliance with the GOI / GoAP requirements.

APIIC shall be constructing CETP using the DBOFT mode after construction of the internal infrastructure in accordance with the MoEFCC Environmental Clearance requirements. The CETP will be designed to take into consideration the wastewater generated from different industry types. To achieve the Zero Liquid Discharge,[5] wastewater generated from different industrial operations shall be properly collected, treated to the prescribed standards, and then recycled or reused for the identified uses.

The due diligence performed by the project team was not restricted due to the COVID19 pandemic. Most of the assessment activities were already completed prior to COVID restrictions. During the public hearing and subsequent data collection, Necessary precautions in terms of masks, social distancing and other COVID19 protocols were followed while conducting the travel and other activities by the PMSC and APIIC team.

Environment Management Plan: This IEE includes an environmental management plan (EMP) to avoid and mitigate potential impacts and risks identified in the environmental assessment. The EMP covers general mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.

As this IEE and EMP is included in the bid and contract documents, the contractor and subcontractors are required to (i) comply with the measures relevant to the contractor in the IEE and the EMP; (ii) make available a budget for all such environmental measures; (iii) provide the implementing agency with a written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the subproject that were not considered in the IEE and the EMP; (iv) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (v) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.

The contractor will be required to submit to the project implementing unit (PIU) the site-specific environmental management plan (SEMP) prior to start of works to ensure site-specific conditions and mitigation measures are appropriate, practical, and applicable. The SEMP will include (i) mitigation measures in line with the EMP included in this IEE including (ii) contractor's roles and responsibilities in obtaining statutory clearances, stakeholders engagement, consultations, and grievance redressal; (iii) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (iv) monitoring program as per SEMP; and (v) budget for SEMP implementation. PIU will review the SEMP, supervise its implementation, and advise contractors on any corrective actions, if required. A copy of the approved SEMP will be always kept on-site and available to stakeholders.

Indicative EMP Cost: Based on the mitigation measures and monitoring program as specified in the EMP of this IEE, the indicative budget for implementation is **₹10,50,000.** The cost includes monitoring for air quality, water quality, and noise levels for baseline and during construction, capacity building, workforce, administrative and other costs (such as public consultation and information disclosure, and GRM implementation). The costs to implement mitigation measures related to construction and execution of works (signs, barricades, warning systems, traffic management, occupational health and safety, waste management and disposal, etc.) are to be covered as part of the civil works.

[5] Zero Liquid Discharge (ZLD) refers to no discharge of any liquid effluent / treated water outside the industrial park / area to another water body.

Consultation, Disclosure, and Grievance Redress Mechanism: The stakeholders were involved during the IEE through public consultations and on-site discussions. The views expressed by stakeholders were incorporated in the IEE and project design. IEE will be made available to the public through the ADB, APIIC websites, and contractors during construction period. The consultation process will continue during project implementation to ensure that stakeholders are fully engaged in the project and can participate in its development and implementation. A grievance redress mechanism is described within IEE to ensure that public grievances are recorded and addressed quickly.

Implementation Arrangement: The implementation arrangements put in place for the MFF, and Project 1 will continue for Project 2. Program management unit (PMU) established within Directorate of Industries by DOIC (EA), is responsible for planning, implementation, monitoring and supervision, and coordination of MFF. PMU is supported by Project implementation units (PIUs) established in Andhra Pradesh Industrial Infrastructure Corporation (APIIC) which will implement industrial infrastructure subprojects under Project 2. PMU and PIUs are supported by a Project Management and Supervision Consultant (PMSC). The institutional roles and responsibilities of PMU and PIUs are established to ensure environmental safeguards are implemented and complied with during design, construction, and operation phases. PMU is staffed with safeguards officers to oversee and ensure environmental and social safeguards compliance. APIIC has two environmental safeguards managers (one in each two zones/nodes) to oversee the day-to- day implementation of SEMPs by the contractors and ensure safeguards compliance. PMSC team with an environment specialist and a health and safety specialist based in PMU and supported by two field-based environmental engineers in Vizag and Chittoor Nodes will assist APIIC and PMU in implementation, monitoring, and reporting on environmental safeguards. Contractors will be responsible for implementing the mitigating measures during the design/construction phase, and APIIC and PMU will be responsible for monitoring. APIIC as a developer of the Industrial Park will set up an Environment Management Cell (EMC) headed by the APIIC Zonal Manager during the operations phase to oversee environmental compliance of the IP and its partner units. PMU and APIIC will ensure that necessary wastewater management facilities including CETP are established prior to start of industrial operations. APIIC has planned that these will be established on Design-Build-Finance-Operate-Transfer (DBFOT) mode after completion of internal infrastructure in start-up areas funded by ADB.

Monitoring and Reporting: PMU will be responsible for overall environmental safeguards compliance of the project. APIIC, with support from PMSC, will submit monthly monitoring reports to PMU. PMU will consolidate the monthly reports and will send semi-annual monitoring reports to ADB. ADB will approve and post the environmental monitoring reports on its website.

Conclusions and Recommendations: Based on the findings of the IEE, the infrastructure development in the proposed start up area is unlikely to cause any significant, irreversible or unprecedented environmental impacts. The potential impacts localized, temporary in nature and can be addressed through proven mitigation measures. Hence, the classification of the subproject as Category B per ADB SPS, 2009 is confirmed. APIIC has conducted an environment impact assessment for the whole of industrial cluster as per the GOI requirements and sought for Environmental Clearance was obtained on 11 November 2020. No further study or assessment is required at this stage.
Recommendations are as follows:

- Ensure IEE including EMP is part of the bid and contract document;
- Obtain statutory clearances prior to award of contract and ensure conditions/requirements are incorporated in the subproject design and documents;

- During bidding stage, orientation on the environmental safeguard requirements are provided to interested bidders;
- Upon mobilization of the contractors, PMU and APIIC to provide a safeguards orientation per IEE and project administration manual;
- Contractor to appoint environmental safeguards nodal person responsible for environmental safeguards compliance, occupational health and safety and core labour standards;
- Submit to APIIC the site-specific EMP (SEMP) and other subplans as required; and
- PMU and APIIC to closely monitor contractor's implementation of the SEMP and provide guidance on corrective actions on a timely manner.

This draft IEE shall be part of tender documents. The final IEE report will incorporate results of detailed engineering design and of any additional baseline monitoring as required (e.g., air, noise, surface water quality) and will be submitted to ADB for approval and disclosure at ADB website.

I. PROJECT DESCRIPTION

A. Background

1. 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).

2. 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 Southeast 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.

3. The Master Plan prepared has finally suggested two nodes one at Vizag and other at Srikalahasthi. The master planning area of both the nodes is close to 34,000 acres (13,700 hectares).

Figure 1: Location of project within VCIC

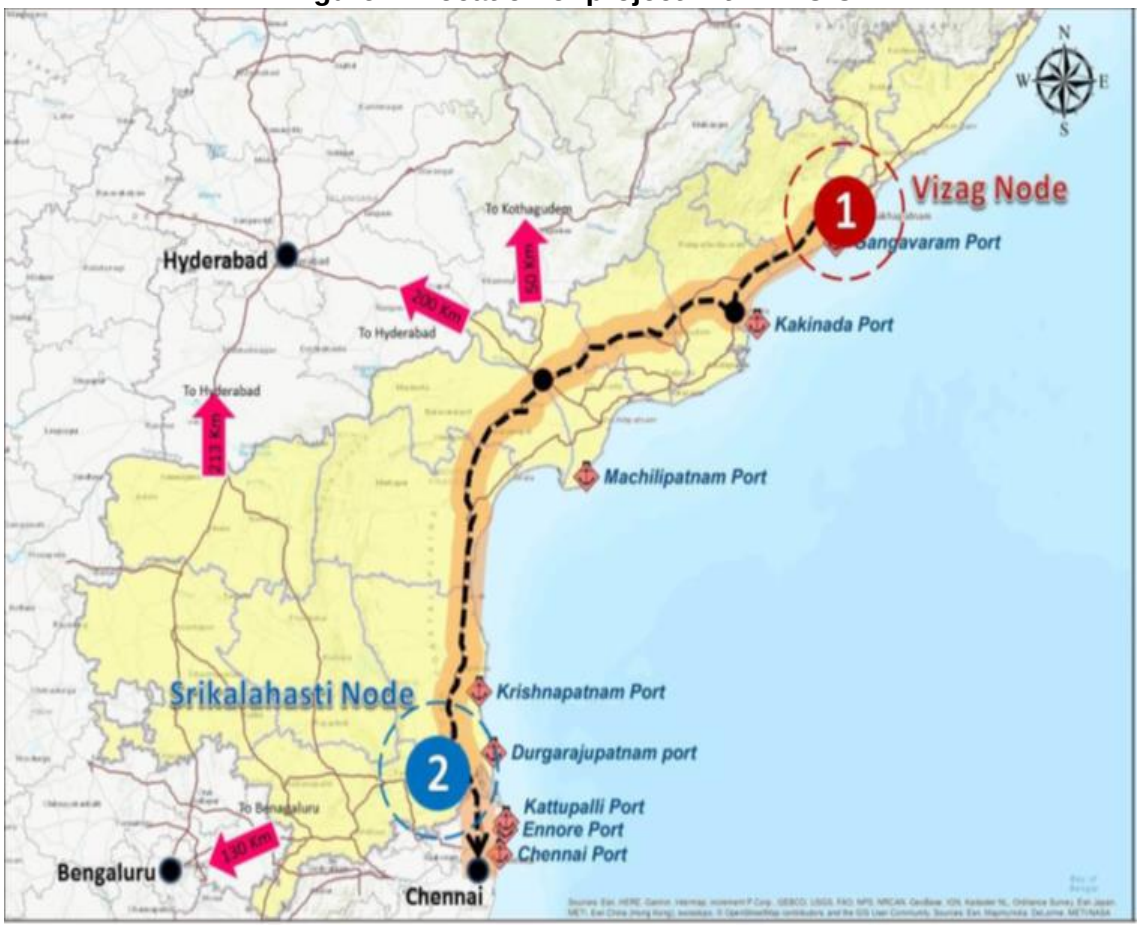


Figure 2: Nearby industrial Blocks for Start-up Area

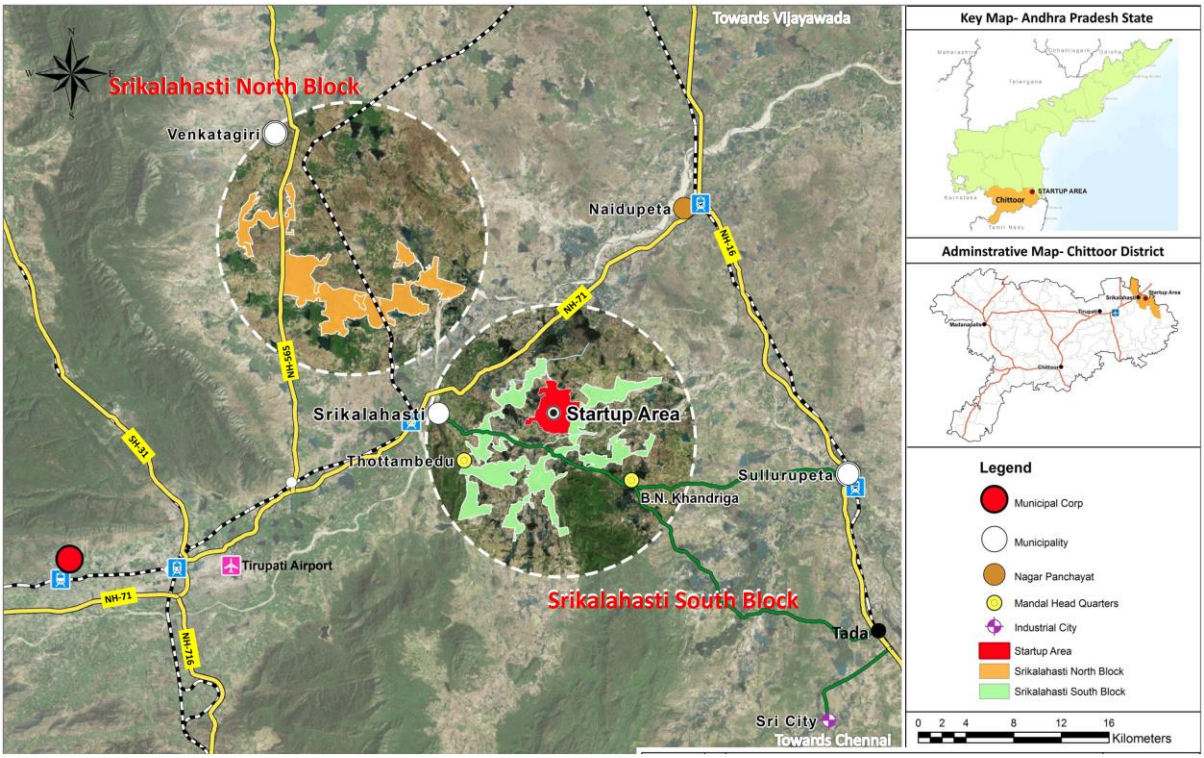
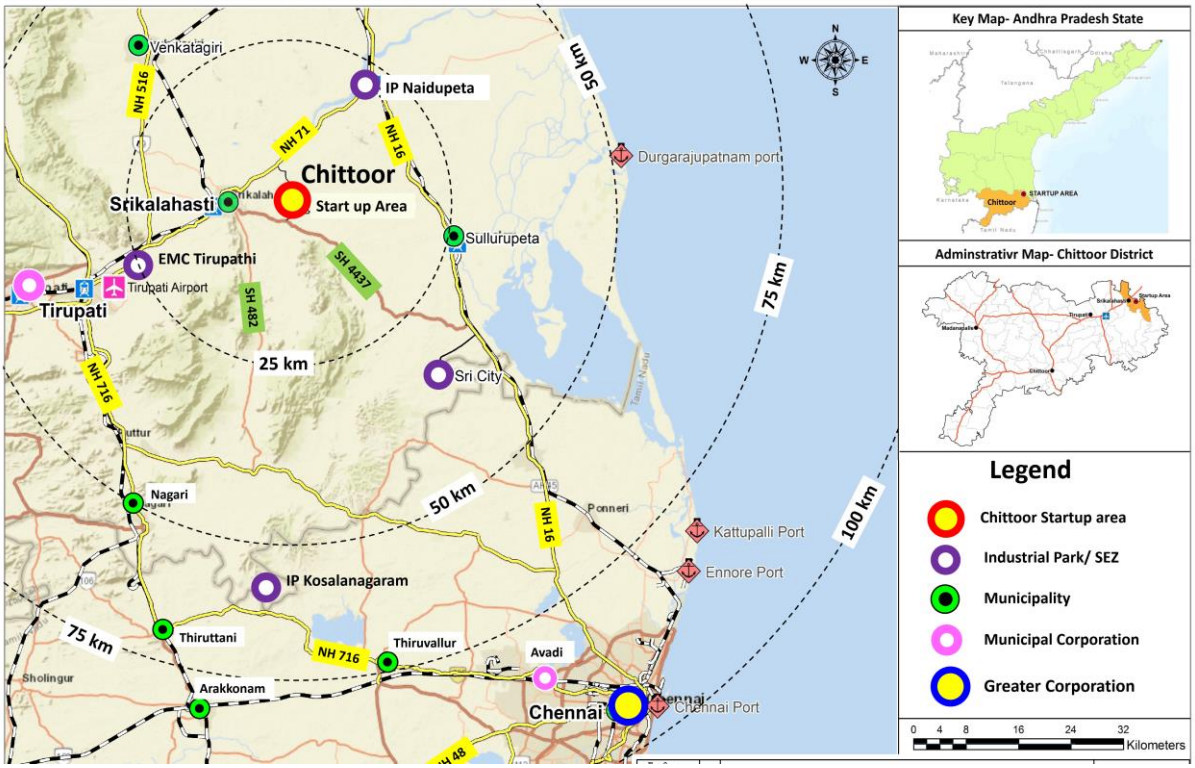


Figure 3: Surrounding Industrial Areas of Chittoor Star-up Area



4. Chittoor node has two project sites, north block site of 11,005 acres and south block site of 13147 acres. In the Initial phase, an area of 938 ha has been delineated in the south block site by APIIC for the Industrial development.

5. Based on the Node level masterplan, industries with the following characteristics are identified into 6 categories for development in Chittoor node: 1. Building Materials Industry/Non Metallic minerals, 2. Electronics and Consumer Durable Industry, 3. Food and Agro Processing Industry, 4. Engineering Industries (Machinery/ Electrical Equipment's/ Automobile etc.), 5. Apparels and Textile Industry, 6. Chemical and Pharma Industry, 7. Logistic and Ware house and 8. MSME (includes Leather, Plastics, wood etc.).

B. Purpose/Objective of IEE

6. The purpose of conducting an IEE is to provide information about the general environmental setting of the project area, identify impact of the project activities (physical infrastructure development of the schools) on the bio-physical, socio-economic, and cultural environment of the project, recommend site specific environmental mitigation measures, and prepare an environmental management plan for the project area to ensure that the IEE addresses the requirements of the following:

(i) ADB's Safeguard Policy Statement, July 2009
(ii) Government of India laws and regulations

7. The initial assessment of the project's environmental impacts has been carried out, and the project activities are not likely to have any significant adverse impacts on the environment that cannot be mitigated through proper management and application of good practices.

C. Extent of the IEE study

8. This IEE report has been prepared on the basis of pre-feasibility study and preliminary DPR, field investigations and surveys, stakeholder consultations and meetings to meet the requirements for environmental assessment process and documentation as per ADB's Safeguard Policy Statement (SPS, 2009). The extent of the IEE was decided considering all likely impacts and risks analysed in the context of the project's area of influence encompassing: (i) the primary project site(s) and related facilities like site clearance, utility shifting etc. (ii) associated facilities project viz. management and handling, storage of hazardous waste, availability and existence of hazardous waste management facilities, disposal of debris, construction camp etc. (iii) areas and communities potentially affected by cumulative impacts, and (iv) potential impact from unplanned but predictable developments caused by the project that may occur at later stage or at a different location.

D. Methodology and Approach of IEE

9. The following activities were undertaken for the purpose of conducting IEE:
(i) Desk review of information such as maps, reports, etc. for the project.
(ii) Preparation of checklist for collecting project related information.
(iii) Review of national and local laws/regulations and procedures relating to environment, health and safety, resettlement, and rehabilitation, etc.
(iv) Field visits to collect data relevant to the study area.
(v) Assessment of Potential Impacts
(vi) Preparation of the Environment Management Plan

1. Primary Data Collection

10. Inventory of all environmental features viz. Ambient Air quality, Noise levels, Soil, water quality, terrain, geologically unstable areas, waterways/waterbodies, roadside vegetation, sensitive receptors, common property resources, utilities, flooding/water logging, biodiversity was carried out in and around the project site.

2. Secondary Data Collection

11. Published reports, government websites, recognized institutions and relevant government departments were consulted to gather information and maps of the project influence area. For information on ambient air quality, soil quality, background noise level, surface and groundwater quality, environmental assessment done by DPR Consultants was referred.

3. Public Consultation

12. Besides consultations with the government agencies, consultations with local people/beneficiary population were held at all major habitations to collect baseline information to better understand of potential impacts and appreciate the perspectives/concerns of the stakeholders. Other Tools.

13. Remote sensing and GIS based land use map of the study area has been reviewed through recent satellite imagery and verified on the ground. Information collected from both primary and secondary sources has been summarized in below Table.

Table 1: Primary and Secondary Information Sources

Information	Sources
Technical Details	APIIC and DPR Consultant (L&T-INFRA Engineering Ltd.)
Technical details of proposed components under the package	APIIC and DPR consultant and site visits to project site.
Climatic condition	Indian Meteorological Department Website/data
Geology, Seismicity, Soil and Topography	State of Environment Report, Pollution Control Board, DPR and Primary Surveys
Land Use/Land Cover	State of the Environment Report, Satellite Imagery based land use analysis
Drainage Pattern	Google Image, Detail Project Report, and on-site observations
Forest/Vegetation	Forest Range Offices/State Forest Department, Andhra Pradesh
Archaeological/Cultural Heritage sites	Archaeological Survey of India
Status of fishing activity	District Fisheries offices
Air quality Noise, Soil and Water quality, Marine Environment and Biodiversity	Primary survey
Hazardous Waste Management practice and requirements	APPCB, Detailed Project Report
Rivergeo-morphology, hydrology, drainage, flood patterns	Detailed Project Report, Consultation, and site verification
Soil profile and measures to control soil erosion	Soil Conservation Department, Govt. of Andhra Pradesh
Ground water Conditions	Central Groundwater Board
Socio-Economic Environment	Different Govt. agencies/civic bodies, official websites maintained by state govt., census of India 2011, and public Consultation during the Field survey

4. Assessment of Potential Impacts

14. Potential significant impacts were identified on the basis of: analytical review of baseline data; review of environmental conditions at site; analytical review of the underlying socioeconomic conditions with the project influence area.

5. Preparation of the Environment Management Plan

15. An EMP for the project was prepared to specify the steps required to ensure that the necessary measures will be taken. The EMP includes the monitoring plan giving details of the resources budgeted and the implementation arrangements.

E. Social Impact Assessment and RP

16. On completion of the detailed engineering designs, a social impact assessment report and resettlement plan shall be prepared based on a census of the displaced persons and socio-economic survey of significantly impacted displaced persons. Social Impact Assessment (SIA) of the displaced persons will be undertaken in each subproject so as to determine the magnitude of displacement and prospective losses, identify vulnerable groups for targeting, ascertain costs of resettlement, and prepare a resettlement and rehabilitation program for implementation.

17. As part of socio-economic survey, wide range of consultations with different impacted groups as well as other stakeholders will be conducted to ascertain their views and preferences. Based on the outcome of these consultations the designs changes, if required and if feasible, and mitigation measures will be incorporated. Consultations will include women and their concerns and reactions to the project will be addressed through appropriate mitigation plan.

18. Subprojects involving acquisition of private land and causes impact to non-titleholders who had been affected by the acquisition of such land and who have been living/working three years or more prior to the acquisition of the land, the scope of SIA provisions of RFCTLARR Act will apply. In such cases, the census and socio-economic survey will be carried out in accordance with the provisions of the RFCTLARR Act.

19. **Land Plan Schedule (LPS)**: LPS to establish the ownership of land shall be prepared based on village maps, field measurement books (FMB) and Adangal (ownership details). Subproject components sited in government land will also require establishing that the ownership is vested with the government through preparation of the LPS. Wherever additional land is required, these LPS would provide the details of landowners and the extent of land being acquired as a percentage total land holding.

F. Structure of the Report

20. The IEE has been structured as recommended in SPS, 2009. An introduction section has been included to have a general overview of the project. Executive Summary describing critical facts, significant findings, and recommended actions has been presented in the beginning of the report. The report has been compiled and presented as follows.

(i) Executive Summary
(ii) Chapter 1 - Introduction
(iii) Chapter 2 - Policy, Legal and Administrative Framework
(iv) Chapter 3 - Description of Project
(v) Chapter 4 - Description of Environment
(vi) Chapter 5 - Anticipated Impacts and Mitigation Measures
(vii) Chapter 6 – Analysis of Alternative
(viii) Chapter 7- Information Disclosure, Consultation, and Participation
(ix) Chapter 8- Grievance Redress Mechanism
(x) Chapter 9- Environmental Management and Monitoring Plan
(xi) Chapter 10- Conclusion and Recommendation

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy

21. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB's Safeguards Policy Statement (SPS), 2009. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.

22. Screening and Categorization. The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact and are assigned to one of the following four categories:

(i) **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.
(ii) **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in Category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
(iii) **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
(iv) **Category FI.** Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system unless all Projects will result in insignificant impacts.

23. The SPS further requires the development of an environmental management plan (EMP) specifying the required mitigation and monitoring and who is responsible for implementation and public disclosure.

24. **Environmental Management Plan:** An EMP which addresses the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the Project's impact and risks.

25. **Public Disclosure**: APIIC, through PMU, shall submit the following to ADB for review and disclosure. on ADB website. Upon receipt of acceptable reports and endorsement from the PMU, ADB will disclose the documents on ADB website so that the affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation.[6]

[6] Per ADB SPS, 2009, prior to disclosure on ADB website, ADB reviews the "borrower's/client's social and environmental assessment and plans to ensure that safeguard measures are in place to avoid, wherever possible, and minimize, mitigate, and compensate for adverse social and environmental impacts in compliance with ADB's safeguard policy principles and Safeguard Requirements 1-4."

(i) draft IEE upon receipt.
(ii) a new or updated/final IEE and corrective action plan prepared during subproject implementation, if any; and
(iii) environmental monitoring reports submitted during subproject implementation upon receipt.

26. **Consultation and Participation:** PMU and PIUs shall carry out meaningful consultation[7] with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

27. **Grievance Redress Mechanism:** APIIC, through PMU, shall establish a mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the subproject's environmental performance. The grievance mechanism shall be scaled to the risks and adverse impacts of the subproject.

28. **Monitoring and Reporting:** PMU shall monitor, measure and document the progress of implementation of the EMP. If necessary, PMU will identify the necessary corrective actions, and reflect them in a corrective action plan. PMU will prepare and submit to ADB semi-annual environmental monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. For subprojects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis until ADB issues a project completion report.

29. **Unanticipated Environmental Impacts:** Where unanticipated environmental impacts become apparent during subproject implementation, PMU shall update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

30. **Pollution Prevention and Control Technologies:** During the design, construction, and operation of the subproject the PMU and PIUs shall apply pollution prevention and control technologies and practices consistent with international good practices, as reflected in internationally recognized standards. When the Government of India regulations differ from these levels and measures, PMU shall achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific subproject circumstances, PMU will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

31. **Occupational Health and Safety:** PMU shall ensure that workers are provided with a safe and healthy working environment, taking into account risks inherent to the sector and specific classes of hazards in the subproject work areas, including physical, chemical, biological, and radiological hazards. PMU shall ensure to take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work by (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification,

[7] Per ADB SPS, 2009, meaningful consultation means a process that (i) begins early in the project preparation stage and is carried out on an on-going basis throughout the project cycle;1 (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

32. PMU shall ensure to apply preventive and protective measures consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines.

33. **Community Health and Safety:** PMU shall ensure to identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the subproject, and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts.

34. **Physical Cultural Resources:** PMU is responsible for siting and designing the subproject to avoid significant damage to physical cultural resources. Such resources likely to be affected by the subproject will be identified, and qualified and experienced experts will assess the subproject's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of a subproject component is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures shall be included in the EMP.

35. **Environmental Audit:** When the subproject involves existing activities or facilities, PMU is responsible to ensure that relevant external experts will perform environmental audits to determine the existence of any areas where the subproject may cause or is causing environmental risks or impacts. If the subproject does not foresee any new major expansion, the audit constitutes the environmental assessment for the subproject.

36. **Bidding and Contract Documents:** IEEs and EMPs are to be included in bidding and contract documents and verified by the PIUs. The PMU and PIUs shall also ensure that bidding and contract documents include specific provisions requiring contractors to (i) comply with all other conditions required by ADB, and (ii) to submit to PIU, for review and approval, a site-specific environmental management plan (SEMP), including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program as per SEMP; and (iv) budget for SEMP implementation. No works can commence prior to approval of SEMP. A copy of the EMP or approved SEMP will be kept on site during the construction period at all times. Non-compliance with, or any deviation from, the conditions set out in the EMP, or SEMP constitutes a failure in compliance and shall require corrective actions.

37. **Conditions for Award of Contract and Commencement of Work:** PMU shall not award any Works contract for a subproject until (i) relevant provisions from the EMP are incorporated into the Works contract; and (ii) the IEE is updated to reflect subproject's detailed design and PMU has obtained ADB's clearance of such IEE. For "design, build, and operate" type contracts, PMU shall ensure no works for a subproject which involves environmental impacts shall commence until (i) relevant provisions from the EMP are incorporated into the Works contract; and (ii) the IEE is updated to reflect subproject's detailed design and PMU has obtained ADB's clearance of such IEE.

B. Environmental Legislation (National and State Laws)

38. Implementation of VCICDP will be governed by environmental acts, rules, policies, and regulations of the Government of India. These regulations impose restrictions on the activities to minimize/mitigate likely impacts on the environment. Many of these are cross sector and several of them are directly related to environmental issues.

39. The Ministry of Environment, Forest and Climate (MOEFCC), Government of India, has the overall responsibility to set policy and standards for the protection of environment along with the Central Pollution Control Board. This includes air, noise, and water quality standards, and the requirements for preparing environmental impact assessment statements for development projects (as applicable). These standards are of significance for the proposed project. The most important of these is the "Environmental Impact Assessment (EIA) Notification, 2006" (as amended).

40. In addition to the EIA Notification, 2006, there are a number of other acts, rules and regulations currently in force that shall apply to VCICDP Chittoor node south zone start-up area. Salient features and applicability of these legislations are provided in Table 2 This presents specific requirements for the project.

41. Implementation of the subproject will be governed by the national and State of Andhra Pradesh environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize/mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure subproject are consistent with the legal framework, whether national, state or municipal/local. Compliance is required in all stages of the subproject including design, construction, and operation and maintenance. Provided the project complies with the national and ADB SPS 2009 requirements, no significant adverse environmental implications are envisaged from the implementation of the project activities.

42. The summary of environmental regulations and mandatory requirements for the subproject is shown in Table 2.

Table 2: Applicable Legal Policy/Rules/Regulations as per Government of India

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
Environmental (Protection) Act, 1986	To protect and improve overall environment	Environment in general
Environmental Impact Assessment Notification (as amended), 2006	Re-engineered EIA notification for a more effective Environmental clearance process	Direct
Air (prevention and control of pollution) Act, 1981	To control air pollution by controlling emissions according to prescribed standards	Control of Air pollution
Water (Prevention and Control of Pollution) Act, 1974	To control water pollution by controlling discharges & Water pollutants as per the prescribed standards.	Control of Water pollution
Noise Pollution (Regulation and Control) (Amendment) rules, 2000 & 2010	Noise pollution regulation and controls	Control of Noise pollution
Solid Waste Management Rules, 2016	For effective management of Solid waste	Appropriate handling of Solid Waste.
Hazardous and other Wastes (Management and Transboundary	For effective management of Hazardous and other waste	Appropriate handling of Hazardous and other Waste

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
Movement) Rules and amendment thereof, 2016		
E- Waste (Management) Rules, 2016 and amended thereof	Consumer or bulk consumer of electrical and electronic equipment's listed in Schedule I shall ensure that e-waste generated by them is channelized to authorized collection centre (s) or registered dismantler (s) or recycler or is returned back to the pickup or take back services provided by the producers.	Involvement of information technology And telecommunication equipment, electrical and electronics.
Batteries (Management and Handling) Rules, 2001 (amended in 2010)	Consumer to ensure that used batteries are not disposed off in any manner other than depositing with the dealer, manufacturer, importer, assembler, registered recycler, re-conditioner or at the designated collection centres.	Appropriate handling of used batteries.
Construction and Demolition Waste Management Rules, 2016	Generator shall prima-facie be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated, as directed or notified by the concerned local authority in consonance with these rules. The generator shall ensure that other waste (such as solid waste) does not get mixed with this waste and is stored and disposed separately.	Appropriate handling of Construction and Demolition waste.
Bio-Medical Waste Management Rules 2016	Generator to take all necessary steps to ensure that bio-medical waste is handled without any adverse effect to human health and the environment.	Appropriate handling of Bio-Medical Waste from the First Aid/Medical Centre etc.,
The Manufacture, Storage and Import of Hazardous Chemical Rules (as amended), 1989	To prevent major chemical accidents arising from industrial activities; and to Limit the effects of chemical (industrial) accidents	Handling of Hazardous Chemicals by the member Industries.
Land Acquisition Act, 2013	Land acquisition and R&R as per applicable law and guidelines.	For Land is being acquired
Companies Act, 2013 (under section 135 and sub-sections (1) and (2) of section 469) also called as Companies (Corporate Social Responsibility Policy) Rules, 2014	According to Schedule 135 sub -section 1, the companies meeting the threshold criteria specified should spend in every financial year, at least 2% of the average net profits of the Company made during the three immediately preceding financial years in pursuance of CSR policy.	The project will need to comply with the requirement as stated in the law.
Contract Labour (Regulation and Abolition) Act, 1970; The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979	Department of Labour, GoAP as principal employer. Contractor shall register with Labour Department, GoAP if inter-state migrant workmen are engaged. Adequate and appropriate amenities and facilities shall be provided to workers including housing, medical aid, traveling expenses from home and back, etc.	Applicable to all construction/civil works. APIIC to obtain Certificate of Registration. Contractors to obtain license from designated labour officer
The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act,	Cess should be paid at rate not exceeding 2% of the cost of construction as may be notified. The employer is required to provide safety measures at the building or construction work and	Applicable to any building or other construction work and employ 10 or more workers

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
1996 and the Cess Act of 1996	other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. The employer has to obtain a registration certificate from the Registering Officer.	
The Child Labour (Prohibition and Regulation) Act, 1986	• No child below 14 years of age will be employed or permitted to work in the entire subproject	No child below 14 years of age will be employed or permitted to work in the entire subproject.
Minimum Wages Act, 1948	• All construction workers should be paid not less than the prescribed minimum wage	Applicable
Workmen Compensation Act, 1923	Compensation for workers in case of injury by accident	Applicable
Equal Remuneration Act, 1979	• Equal wages for work of equal nature to male and female workers	Applicable
AP State Environment Policy	Follows the National Environment Policy, 2006. Project implementation should adhere to the policy aims	Applicable
The Motor Vehicles Act, 1988	Standards for vehicular pollution and prevention control. The authority also checks emission standards of Registered vehicles, collects road taxes, and issues licenses. In August 1997, the Pollution under Control Certificate (PUC) program was launched in an attempt to crackdown on the vehicular emissions in the States. All the vehicles that will be used in construction of the subproject will have to comply with the PUC norms set down under this act.	Applicable
Minor Mineral and concession Rules	For opening new quarries. Regulate use of minor minerals like stone, soil, river sand etc.	Applicable May also be obtained from licensed quarries
The Mining Act (1952)	The mining act has been notified for safe and sound mining activity. The construction of road subproject will require aggregates. These will be procured through mining from riverbeds and quarries	Applicable May also be obtained from licensed quarries
Fly Ash Notification of Ministry of Environment and Forests. S.O.763(E), New Delhi, dated: 14th September 1999 (as amended till 2016)	The MoEFCC had issued in 1999 a notification that all brick units within 100km radius (extended to 300 km) of thermal power plants were required to use fly ash for making bricks as well as using it for construction activities like building or roads.	Mandatory use of ash-based bricks or products in infrastructure construction including buildings in designated Industrial estates or parks or SEZ
Public Liability and Insurance Act 1991	Protection from hazardous materials and accident.	Applicable
National Green Tribunal Act, 2010 (NGT)	Grievance's process and how they will be dealt with. To handle the expeditious disposal of the cases pertaining to environmental issues	Applicable when stakeholder approaches NGT
Explosive Act 1884 - For transporting and storing diesel, bitumen etc.	Safe transportation, storage and use of explosive material.	Applicable

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
The Factories Act, 1948 - The Andhra Pradesh Factory Rules	The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours and rendering information-regarding accidents or dangerous occurrences to designated authorities.	Applicable
Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996.	The Rules provide for mandatory preparation of On-Site Emergency Plans by the industry and Off-Site Plans by the district collector and the constitution of four tier crisis groups at the centre, district, and local levels for the management of chemical disaster.	Applicable
Permission for extraction of ground water for use in road construction activities from State Ground Water Board.	Extraction of groundwater: To rehabilitation and improvement of water supply. To be obtained prior to initiation of any work involving abstraction of groundwater during construction phase if any by contractors.	Applicable
Permission for use of water for construction purpose from irrigation department	Use of surface water for Construction to be obtained prior to initiation of any work involving use of surface water for construction	Applicable
The Right to Information Act, 2005	It is an act to provide for setting out the practical regime of right to information for citizens to under control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.	The Act is a big step towards making the citizens informed about the activities of the Government.

C. Government of India Environmental Assessment Procedure

43. The EIA Notification, 2006 (as amended), sets out the requirement for environmental assessment in India. This states that prior environmental clearance (EC) is mandatory for the development activities listed in its schedule and must be obtained before any construction work or land preparation (except fencing and surveys) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

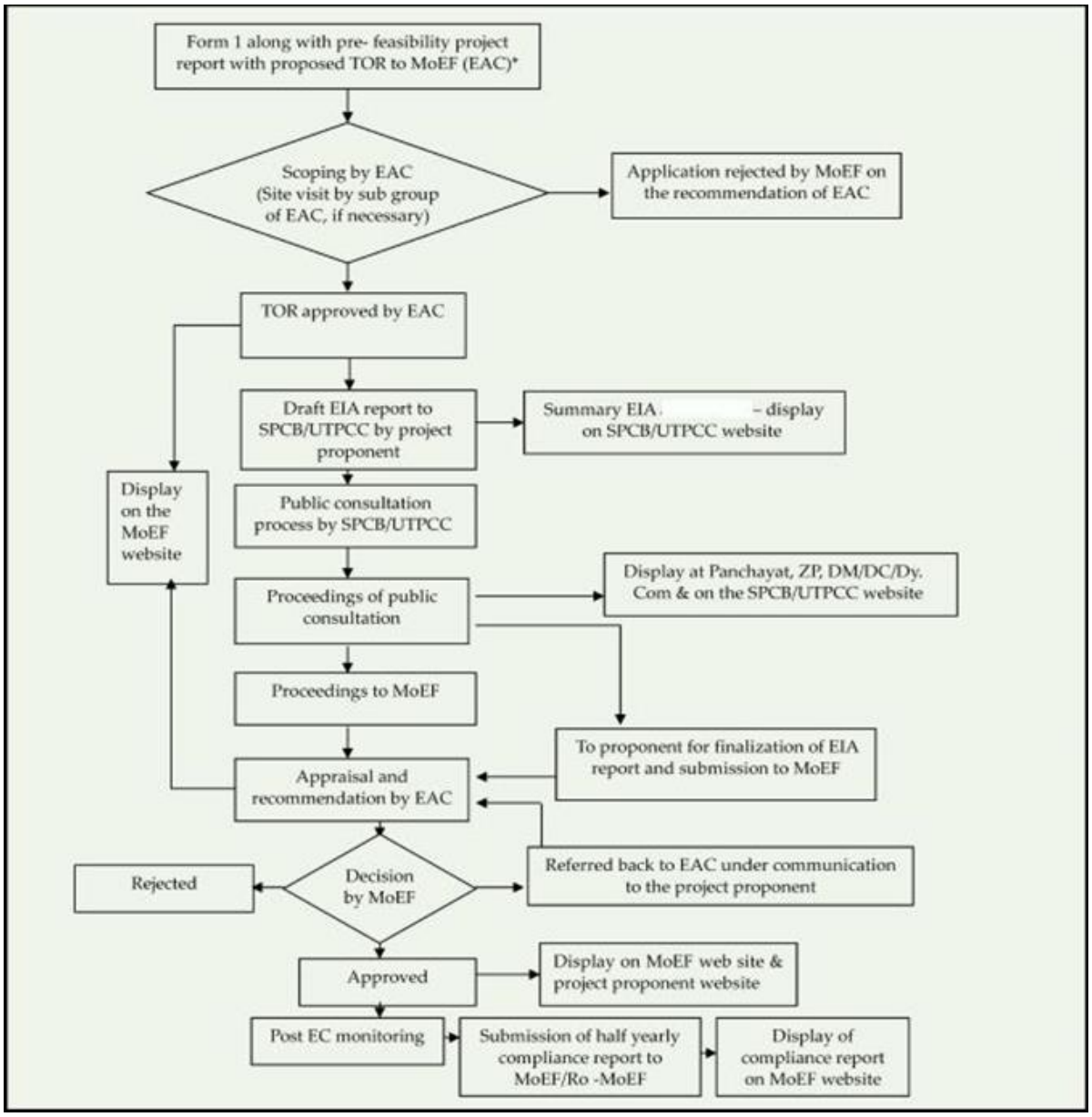
(i) **Category A:** projects require EC from MOEFCC. The proponent is required to provide preliminary details of the project in the prescribed form, after which an Expert Appraisal Committee (EAC) of the MOEFCC issues comprehensive terms of reference (ToR) covering standard ToR for the environmental impact assessment (EIA) study within 60 days. On completion of the study, Public Consultation and review of the report by the EAC, MOEFCC considers the recommendation of the EAC and provides the EC if appropriate.

(ii) **Category B:** projects require EC from the State Environment Impact Assessment Authority (SEIAA). The State-level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study), and issues ToR for B1 projects within 60 days. On completion of the study, public consultation (as

applicable) and review of the report by the EAC, the SEIAA issues the EC based on the EAC recommendation. The Notification also provides that any project or activity classified as category B will be treated as category A if it is located in whole or in part within 5.0 km/10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

44. Proposed Chittoor Node South Cluster Start-Up industrial area will be categorised under Category A due to overall master plan area will be more than 500 ha and will house any category of industries. The procedure for obtaining Environmental Clearance is depicted in following Figure 4.

Figure 4: Environmental Clearance Process as per MOEFCC, GoI Regulation[8]



45. The Form 1 application along with draft terms of reference for carrying out EIA study was submitted to MOEFCC, GoI. Expert Appraisal Committee (EAC), MOEFCC has

[8]Source: ASCI EIA manuals.

reviewed the project and issued the ToR vide F.No: 21-76/2018-IA.III dated January 04, 2019. The ToR is attached as **Appendix 1.** Environmental Clearance was obtained vide F. No. 21-76/2018-IA.III dated 11 November 2020 and given as **Appendix 2**.

46. The timeline for Environmental Clearance obtained is given below:

Sl. No	Timeline	Chittoor Start-up Area
a.	Date of submission of application of ToR	29-Sep-2018
b.	Date of ToR	4-Jan-2019
c.	Date of Public Consultation and Public Hearing	24-July-2020
d.	Date of submission of Final EIA to MOEFCC	17-September-2020
e.	Date of EC	11-November-2020

D. International Environmental Agreements

47. India is a party to the following international convention that may apply to this subproject, especially in GHG and management and handling of Hazardous Wastes.

Table 3: International Environmental Agreements

No.	Agreement	Requirements for the Project
1	United Nations Framework Convention on Climate Change (UNFCCC), 1993	The UNFCC is an international environmental treaty with the main objective to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. India signed the UNFCC on 10 June 1992 and ratified it on 1 November 1993. The project will ensure that all construction activities will not significantly increase the GHG emissions and ensure that design of all infrastructure are resilient climate change impacts.

48. **Andhra Pradesh Government Regulatory Body.** The Andhra Pradesh Pollution Control Board (APPCB) is the main state-level regulatory agency that is responsible environment protection and pollution control. APPCB through its Regional Offices (RO) in Tirupati region will regulate environmental protection related activities. Regional Officer's at these locations will monitor the subproject operation and compliance with the standards.

49. APPCB monitors the environmental parameters to check whether or not it meets the standards stipulated in its consent order. Surveillance monitoring by APPCB staff, at least once a year, by visiting the project sites and collecting the sample and testing at APPCB laboratory, and specific monitoring in case of public complaints.

E. ADB's Safeguard Requirement

50. The Asian Development Bank has defined its Safeguard requirements under its "Safeguard Policy Statement" (SPS, 2009). Project categorization has been done using REA checklist and the project is categorized as category B. As per SPS 2009, category B projects warrants preparation of an IEE.

F. Grievance Redress Mechanism

51. People that are affected by the impacts of this subproject will have a channel to register their grievance. This report and the EMP describe a grievance redress mechanism (GRM) to document and resolve complaints from affected people. The proposed GRM was explained to the attendees of the public forum. The GRM will be accessible to diverse members of the community, including more vulnerable groups such as women and youth. Multiple points of entry and modes of access, including face-to-face meetings, written complaints, telephone conversations, or e-mail, will be available. Opportunities for confidentiality and privacy for complainants will be honoured where this is seen as important.

G. EHS guidelines of World Bank and Good International Industry Practice (GIIP)

52. World Bank and IFC formulates the general EHS guidelines will be applicable and implemented through EMP and Environmental Monitoring Plan. The general EHS guidelines are available online and can be accessed at website addresshttps://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES

53. The compliance to the specific EHS guidelines is given below.

Table 4: World Bank EHS Guidelines

World Bank EHS Requirements	Compliance and Action Plan
Emissions from point sources should be avoided and controlled according to good international industry practice (GIIP) applicable to the relevant industry sector, depending on ambient conditions	Industries shall adopt APPCB/CPCB regulation and air pollution control measures
The stack height for all point sources of emissions, whether 'significant' or not, should be designed according to GIIP to avoid excessive ground level concentrations	Industries shall adopt APPCB/CPCB regulation in maintaining the stack heights
Monitoring of air quality	Air quality monitoring stations shall be established
Water quality monitoring program with adequate resources and management oversight should be developed	Monitoring program shall be carried out
Water conservation programs should be implemented	Water reuse/recycle techniques shall be adopted to the extent possible
Hazardous material management	Hazard assessment should be performed by specialized professionals using internationally accepted methodologies and mitigation measures suggested shall be followed
Occupational Health and Safety	OHS guidelines shall be followed
Waste Management; Hazardous wastes should always be segregated from non-hazardous wastes. Hazardous waste should be stored so as to prevent or control accidental releases to air, soil, and water resources in area location	Industries shall follow the APPCB/CPCB guidelines and hazardous waste shall eb segregated and sent to nearby TSDF for treatment and disposal
Noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception	Industries shall adopt noise control techniques.
Noise monitoring may be carried out for the purposes of establishing the existing ambient noise levels in the area of the proposed or existing facility, or for verifying operational phase noise levels	Noise monitoring programme shall be taken place
Contamination of land should be avoided by preventing or controlling the release of hazardous materials, hazardous wastes, or oil to the environment	Industries shall avoid such land contamination and shall adopt immediate recovery methods in case of any accidents

III. DESCRIPTION OF PROJECT

A. Project Overview

54. APIIC has identified two sites for industrial development in Chittoor node: north block site of 11,005 acres (4,455.5 ha) and south block site of 13,147 acres (5,322.7 ha). In which, the Initial phase as start-up, an area of 938 ha has been delineated in the south block site by APIIC for the Industrial development.

55. The start-up area will have industrial manufacturing zones comprising of Building Materials Industry/Non Metallic minerals, Electronics and Consumer Durable Industry, Food and Agro Processing Industry, Engineering Industries (Machinery/ Electrical Equipment's/ Automobile etc.), Apparels and Textile Industry, Chemical and Pharma Industry, Logistic and Ware house and MSME (includes Leather, Plastics, wood etc.). Apart from the manufacturing zones, total area is planned for green/open areas, amenities and utility space, R&R, technical and commercial infrastructure to accommodate training centre, R&D centre, commercial buildings like bank and ATMs, offices, traders, shopping, etc. and residential zone.

56. Utilities are planned and zoned across the project site. It will include water supply system, waste management facilities, power sub-station and distribution network, fire station. Based on the requirement, these facilities are spread across the project site. Logistic hub will include warehousing, storage facility, container terminal, truck parking facility, workshops, weigh bridge, etc.

57. The master planning of Chittoor Node has also taken into consideration the social and utilities infrastructure up gradation required in the neighbouring towns due to the accelerated population in-migration from industries. Owing to the target type of industries being attracted to the site; the jobs being created are not just mundane assembly jobs, but skill level jobs are being created.

58. **Proposed subproject under VCICDP Project 2**. APIIC proposes to develop the start-up area of 938 ha of land in Chittoor south, and under this subproject it is proposed to develop the following infrastructure in the start-up area: internal roads, storm water drains, water treatment plant, clear water transmission lines, sump and reservoirs, internal water supply pipelines, electrical sub stations, internal power distribution lines with street lighting, and green belt and greening. APIIC shall be the implementing Agency.

59. Under the VCICDP Project 2, road connectivity of the Chittoor South industrial cluster to the national highway (NH 71) will also be improved. A separate subproject[9] is proposed to widen and improve the existing road, which will be implemented by APRDC. A separate IEE has been prepared for this road subproject. For water supply, while treatment, storage and distribution are proposed under this subproject, bulk water supply to the industrial cluster will be provided from the infrastructure being developed under the Project 1 subproject of "Providing water supply to industrial clusters in southern region of Andhra Pradesh VCICDP/APIIC/05". This subproject is under implementation and construction likely to be completed in June 2023. A separate IEE[10] was prepared for this subproject.

[9] Development of road for external connectivity to Routhusuramala Cluster. part of South Block of proposed Yerpedu – Srikalahasthi Node (Package: VCICDP/APRDC/05)

[10] https://www.adb.org/projects/documents/ind-48434-003-iee-14

B. Proposed Project Site

1. Location

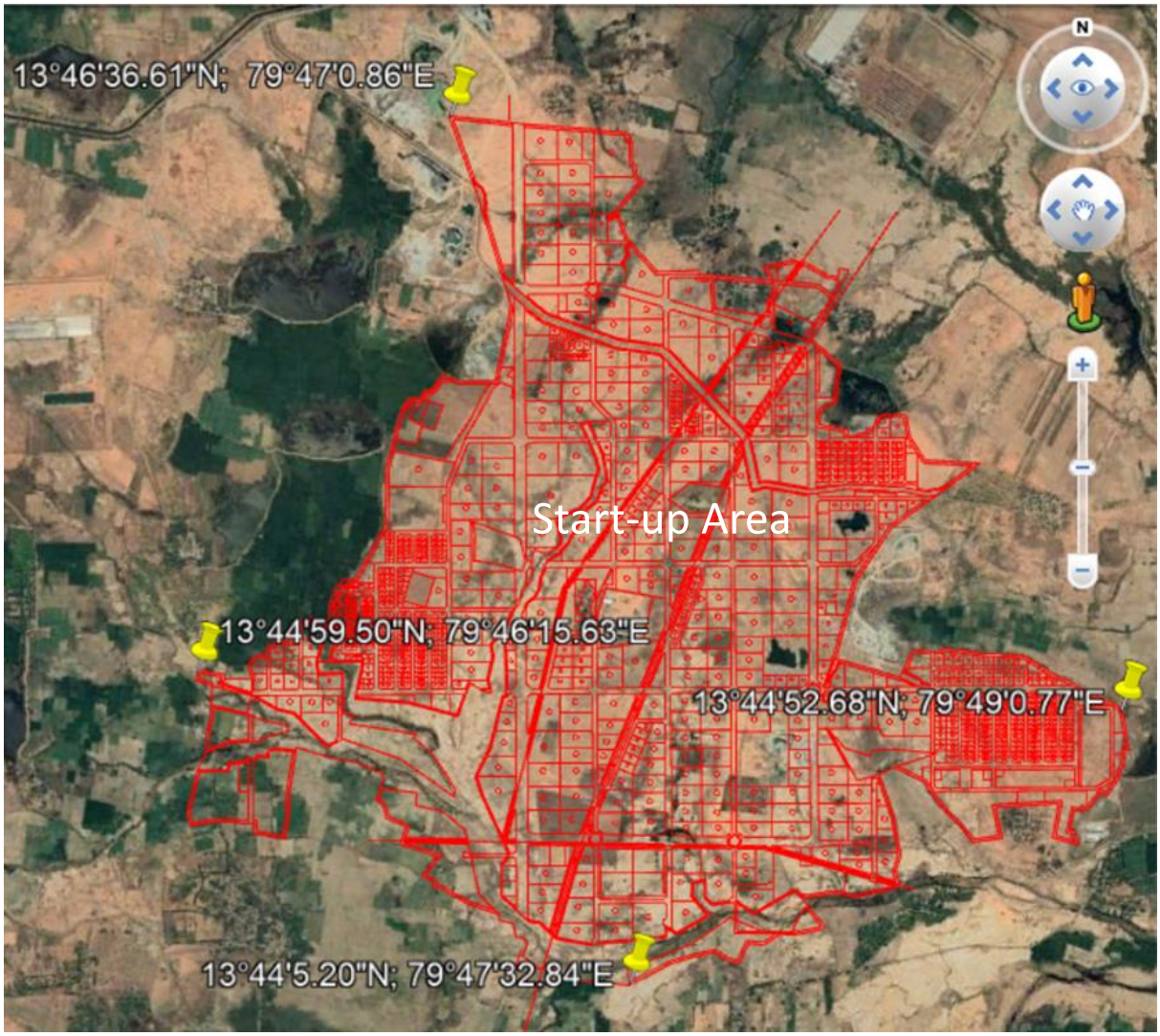
60. The project site is covering an area of 938 ha located in Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S.Puram villages in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh.

61. The site is located at a distance of about 125 km- northwest 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. 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.

Figure 5: Project Location (Chittoor District, AP)

Figure 6: Site Photos and Google Earth Map

	
Exhibit 1: Site view 1: Towards Northeastern	**Exhibit 2: Site view 2: Towards Eastern side**
	
Exhibit 3: Site view 3: Towards Southern side	**Exhibit 4: Site view 4Towards South-eastern side**



2. Existing Connectivity

62. Road: The project site is connected to 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. 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 augmenting the existing road, connecting NH 71 and Chennai Road via project site under the VCICDP Project 2 (Package: VCICDP/APRDC/05 Development of Road for External Connectivity to Routhusuramala Cluster which provides Connectivity to Routhusuramala Cluster (Part of South Block of Proposed Yerpedu – Srikalahasthi Node)

63. Rail Connectivity: The nearest railway station is Srikalahasti Railway station is at the distance of 18 km from the project site, Naidupeta railway station is at the distance of 25 km and Renigunta railway station is 36 km and from the project site.

64. Air connectivity: The Nearest International Airport is Tirupati airport is at the distance of about 35 km from the project site, Chennai airport is around 140 km from the project site, and Bengaluru airport is about 300 km from the project site.

65. Port connectivity: The Nearest Port is Krishnapatnam port is at the distance of 70 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.

3. Land Status

1. Industrial Park (Phase- I / start-up area) at South Block, Chittoor Node in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh is covering an area of about 938 ha. The project start-up area will involve acquisition of 161.03 acres (65.17 hectares) of private land and resumption of 1494.70 acres (604.9 hectares) of assigned land. Further, the subproject involves transfer of 572.61 acres (231.73 hectares) of government land which is part of this subproject layout, being village site, road/ cart track, stream/ kaluva (canal) / TGP Canal, tank and quarries, will be maintained without altering its status. The subproject land requirement (as per the layout) totals about 2627.65 acres (1063.39 hectares). The subproject involves involuntary resettlement impacts to 874 families and the detail of the involuntary resettlement impacts by the subproject are covered in the RIPP prepared for the subproject.

4. Existing Land use Pattern

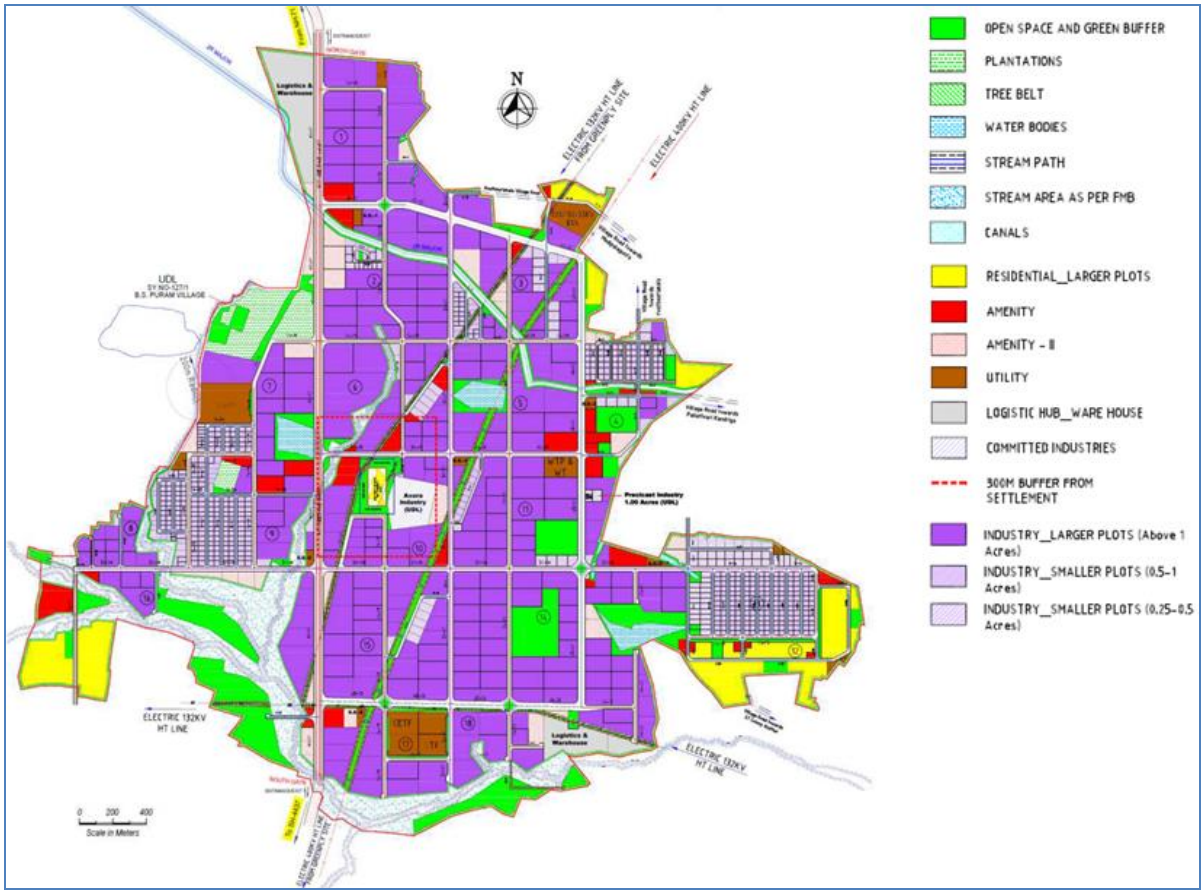
66. The land use of the site under consideration is predominantly barren/un culturable/ wasteland (scrub land & salt affected) and partly agricultural crop/plantations, water bodies/streams/canals, mining/quarrying area and habitations (Sastriyanadhi Colony). Sastriyanadhi Colony is a small hamlet which is located within the land earmarked for Start-up area. Opposite to the hamlet, a new industrial unit by name Axora Resources is coming up. Axora Resources is an industry, working on extraction of Lead from Scrap Batteries. Maintaining the Industry as it is by Integrating into Master Plan and excluding the settlement from boundary and R&R of the same is being planned which will ensure insignificant impact. It is noticed that the branches of canals from the 7th branch canal pass through the project site and also the Natural streams are noticed at the southern part of the project site. The stone quarries turned rain fed ponds are also observed inside the project site.

5. Proposed Land use[11]

67. The Conceptual Master Plan of the Chittoor IP (Start-Up Area) is shown in the following figure

[11] The land use break-up (Table 5) and plan (Figure 7) were initially prepared for start-up area of 2646.60 acres or 1071 ha. This will be updated with revised figures for finally agreed ADB funded start-up area of 953 ha.

Figure 7: Start – Up Area Conceptual Master Plan



68. Proposed land use breakup of subproject area is given in Table 5 below.

Table 5: Land Use of Chittoor node Start-Up Area

Land Use Classification	Area in Acres	%
Total Site Area as per Revenue records (A)	**2646.69**	
Undevelopable land (B)		
Kunta	**269.71**	
Canal area	**34.20**	
Existing Plot and village site Area	**25.08**	
Sub-total of Undevelopable area (B)	**328.99**	
Net developable area (A-B)	**2317.70**	
1. Roads area	**363.38**	**15.68**
2. Industrial Use (plotted area)	**1235.56**	**53.30**
4. Residential Use	**102.63**	**4.43**
5. Logistics hub& warehouse	**49.73**	**2.15**
6. Recreational		
i) Open space	**237.24**	**10.23**
ii) 9m canal/stream buffer	**31.29**	**1.36**
iii) HT Corridor buffer	**25.02**	**1.08**
iv) 15m EC buffer	**72.54**	**3.13**
7. Common Facility Area		
i) Common Amenities-I	**69.32**	**2.99**
ii) Common Amenities -II	**67.70**	**2.92**
iii) Common utilities	**63.31**	**2.73**

69. **Land for industrial use.** An area of 1235.56 acres is proposed for industrial plots. Proposed product mix includes the following:

(i) Building Materials Industry/Non-Metallic minerals
(ii) Electronics and Consumer Durable Industry
(iii) Engineering Industries (Machinery/ Electrical Equipment's/ Automobile etc.,)
(iv) Food and Agro Processing Industry
(v) Apparels and Textile Industry
(vi) Chemical and Pharma Industry
(vii) Logistic and Warehouse
(viii) MSME (includes Leather, Plastics, wood etc.,)

70. **Land for amenities.** About, 137.02 acres of total area is proposed for Amenities-I and II Area. General Shops, offices, restaurant, Malls, etc., General shopping, like stationary, communication, industrial hardware & spares, Packers &movers, Courier, Transporters, Small offices, Banks, Post, ATM, café, eateries, Lodging boarding, Restaurants, Mall/screen, garages, showrooms, communication providers, Business centre, etc. Basic amenities like ATM, Medical shops, public rest rooms, Food and beverages, religious facilities Admin Block/Training Centre/Other Supporting Facilities (Incubation Centre, Convention Centre, Courier Services, Post Offices, Banks, Security etc.,) are planned. Amenities – Health related – (Polyclinic, Trauma, PHC, diagnostic centre, labs), Educational –Skill development centre, Primary & secondary educational inst., Cultural/ regional centres, religious, Kalyan mandap in residential zone, Parking with stalls, police station.

71. **Land for residential use.** About, 102.63 acres of total area is proposed for Residential Area. Residential area will be facilitated with good infrastructure facility and accessibility. This will cater to the housing requirements of the employees in the proposed development.

72. Sastriyanadhi Colony- will not be relocated and retained within project site. A green buffer of 50 m will be provided around the settlement. Afterwards the same land will be firstly as same type of industry or any compatible use as per market dynamics at that time.

73. **Land for utilities.** About, 63.31 acres of total area 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.

74. **Land under green belt/green areas.** The green belt areas considered in the Start-up area is given in Table 6 below.

Table 6: Green Belt/ Areas

Details of Green Area	Area in Acres
Open Space	237.24
HT BUFFER	25.02
Canal/Stream Buffer	31.29
15M BELT	72.54
Total	366.08

75. Over and above the above stated area, all Individual industries will have green areas and other land use such as logistics, commercial, residential, amenities etc., will also have area under green.

C. Proposed Subproject Components in Project 2 VCICDP (funded by ADB)

76. The proposed subproject includes construction of the following components in the start-up area of Chittoor south industrial cluster (**Table 7**). The entire works shall be procured through a single works contract package. Further details of proposed infrastructure are presented in the following subsections.

Table 7: Subproject Components Proposed under ADB funded Project 2

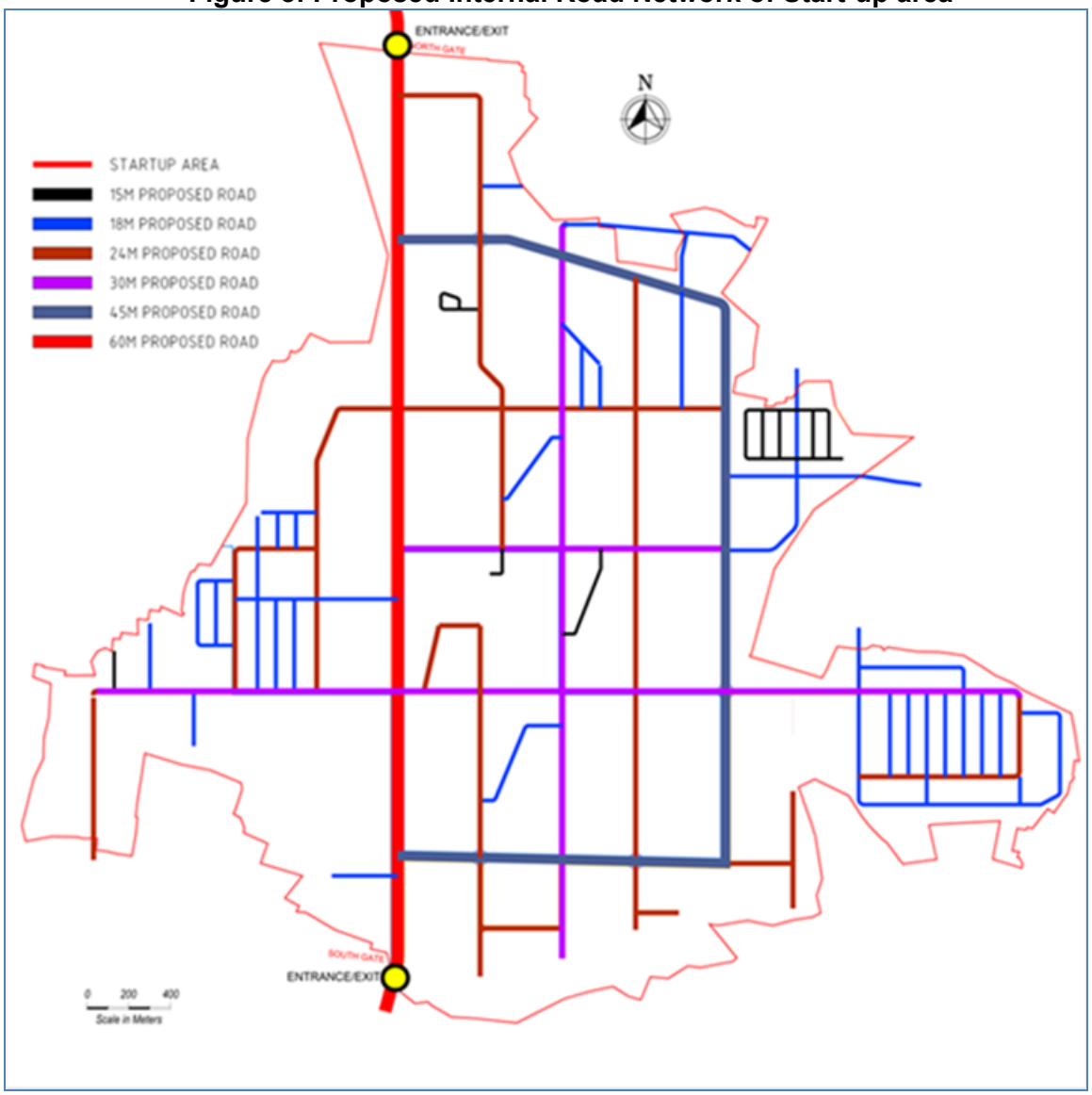
<table>
<tr><td>1</td><td>Roads and drains</td></tr>
<tr><td>(i)</td><td>• 42.8 km, length of roads which include 17 minor bridges (8 nos on canal crossing and 9 nos on stream crossing) and 112 cross culverts.
• Flexible pavements consisting of bitumen concrete (BC), dense bitumen macadam (DBM), wet mix macadam (WMM), granular subbase (GSB) and subgrade (SG) is designed as per IRC 37 – 2018 for the pavement life period of 20years.
<table>
<tr><th>Proposed Internal Roads</th><th>Road Length (km)</th></tr>
<tr><td>Roads with 60 m wide right of way (ROW)</td><td>4.37</td></tr>
<tr><td>Roads with 45 m ROW</td><td>5.84</td></tr>
<tr><td>Roads with 30 m ROW</td><td>9.49</td></tr>
<tr><td>Roads with 24 m ROW</td><td>15.74</td></tr>
<tr><td>Roads with 18 m ROW</td><td>16.10</td></tr>
<tr><td>Roads with 15 m ROW</td><td>3.27</td></tr>
</table>
• Street lighting, road furniture, at grade junctions and pathways included for the entire length of the internal road network.</td></tr>
<tr><td>(ii)</td><td>86 km of storm water drains</td></tr>
<tr><td>2</td><td>Water supply</td></tr>
<tr><td>(i)</td><td>100 m long 400 mm diameter ductile iron (DI) K9 Raw water transmission line from GLBR to WTP</td></tr>
<tr><td>(ii)</td><td>4.5 MLD water treatment plant with SCADA</td></tr>
<tr><td>(iii)</td><td>800 kilo liter (KL) clear water sump at WTP & pump station with 2 numbers of 75 KW Pumps (1 working+1 standby)</td></tr>
<tr><td>(iv)</td><td>2 numbers of overhead service reservoirs (OHSR) with 1300KL each (total capacity 2600 KL)</td></tr>
<tr><td>(v)</td><td>5.53 km clear water transmission pipeline DI K9 of 150mm-350 mm diameter</td></tr>
<tr><td>(vi)</td><td>75.55 km clear water distribution pipelines DI K7 of 100 mm to 300 mm diameter</td></tr>
<tr><td>3</td><td>Power distribution</td></tr>
<tr><td>(i)</td><td>Electrical substations, internal power lines and street lighting.
• 33 KV Sub-station - 3 No’s
• 11 KV Lines with Poles - 20.304 km with 480 No’s
• 33 KV DC Lines on Spun Poles - 35.88 km with 843 No’s</td></tr>
<tr><td>4</td><td>Green areas / land scaping</td></tr>
<tr><td>(i)</td><td>15 m wide peripheral green belt (72.54 acres)</td></tr>
<tr><td>(ii)</td><td>Landscape in green areas, environmental monitoring, operation and maintenance (O&M) of WTP.</td></tr>
</table>

1. Internal Roads

77. The primary road is main link road from village Nelaballi (NH71 to Pallamallaon Srikalahasti-Tada Road) is state level road passing through the start-up area as main road. The entire project area will have different hierarchy of roads; primary road is of 60 m right of

way (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 45 m, 30 m, 24 m, 18 m and 15 m ROW are provided. All roads will have storm water drains and footpaths. Wherever possible natural streams will be used for Storm water runoff with design taking into consideration the existing plus plotted areas. The tentative circulation plan is shown in Figure 8. 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.

Figure 8: Proposed Internal Road Network of Start-up area



2. Storm Water Drains

78. All roads will have storm water drains in footpaths. There are natural drains of varying in orders and distributary canals noticed in the project area. Planning is being done in such a way that there will not be any disturbance for the existing drainage pattern of the region/study area. Maintaining the major natural drains undisturbed with buffer and Diversion of lower order drains if any shall be carried out provided that drainage pattern of the region is

maintained. Storm water drainage system is being planned wherever possible use of natural streams for Storm water runoff.

3. Water Supply - Collection, treatment, and Distribution System

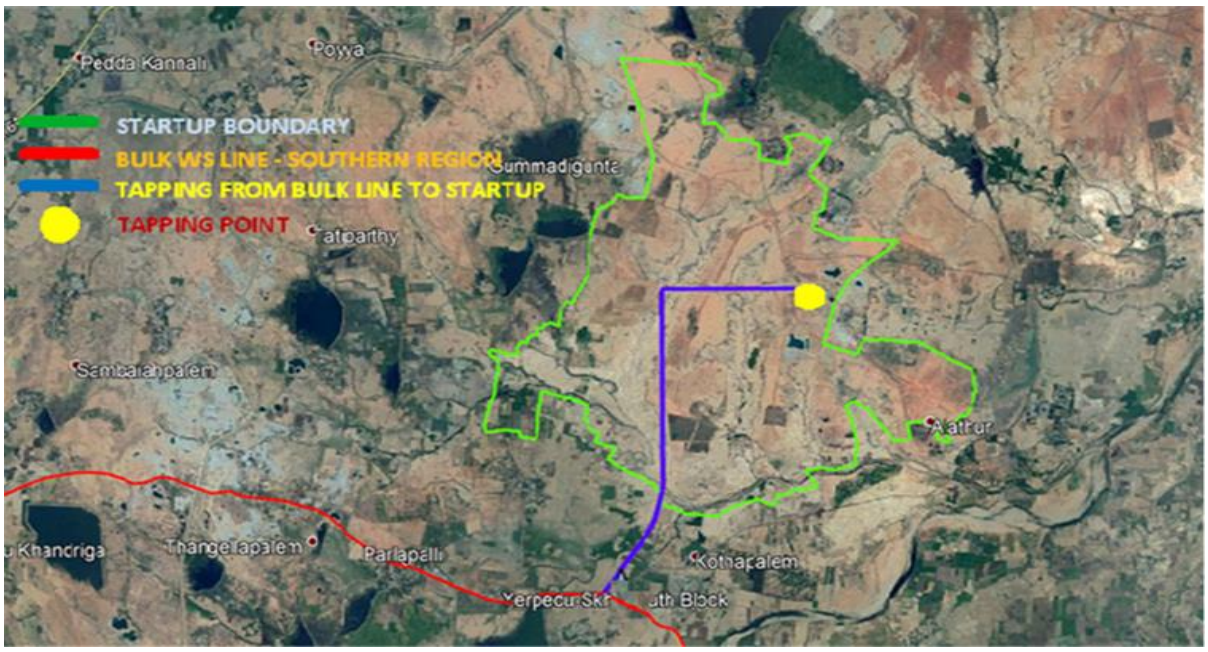
79. **Water demand. T**otal bulk water demand is estimated as is 17.1 MLD including transmission losses. It is proposed to reuse the treated wastewater of 5.8 MLD for green belt and other uses and accordingly the net daily water requirement is estimated at 8.75 MLD. Fresh water is proposed to supply for domestic, industrial process and firefighting. Recycled water is proposed for landscape, flushing, industrial green belt and other industrial usage such as cooling, cleaning etc.

80. **Water source.** No new water source will be developed for the subproject. APIIC is currently implementing a subproject under the VCICDP Project 1 for "providing water supply to industrial clusters in southern region of Andhra Pradesh - package VCICDP/APIIC/05) to have a reliable continuous supply of surface water for the Industries, APIIC has proposed this bulk water scheme with source of water as Kandaleru reservoir for the following Industrial clusters / Industrial parks.

(i) Krishnapatnam Node (CEZ, CBIC)
(ii) Naidupeta
(iii) Chittoor South Industrial Cluster
(iv) IP Mambattu
(v) Chinnapanduru (Hero Motor Corp. & Apollo Tyres)
(vi) SRI City

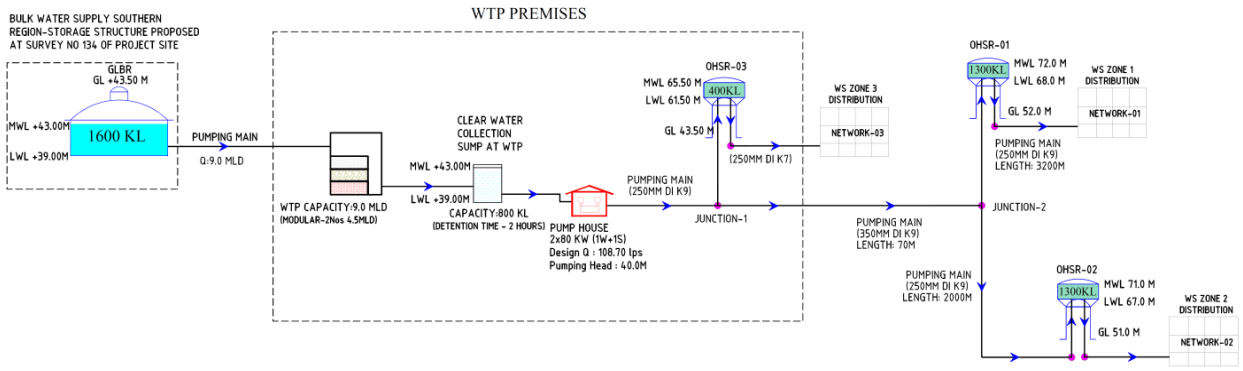
81. This subproject is currently under implementation, and construction work is likely to be completed in June 2023. As part of this, APIIC has proposed one ground level balancing reservoir (GLBR) of 1600 KL capacity and overhead service reservoir (OHSR) of 400 KL capacity in the Chittoor south cluster start up area. The location of the proposed GLBR and OHSR in the start-up area and its tapping point is shown in below figure.

Figure 9: Water Tapping point from BULK WS line



82. Under this subproject under VCICDP Project 2, it is proposed to develop treatment, storage and distribution infrastructure. The schematic flow diagram for developing the potable water supply system for the Start-up area is represented below in figure 10. Under this subproject, it is proposed to develop water treatment, storage, transmission and distribution infrastructure, and details of proposed water supply infrastructure is provided below.

Figure 10: Schematic Flow Diagram for Potable Water Supply



83. **Water treatment plant.** The raw water from GLBR will be treated in proposed WTP. Treated water shall meet the acceptable standards of potable water as prescribed by IS10500:2012". It is proposed to construct the WTP in two modules of 4.50 MLD each for start-up area considering the development and water requirement. Water Treatment Plant (WTP) is proposed to meet the acceptable standards of potable water as prescribed by Central Public Health and Environmental Engineering Organization (CPHEEO) manual on "Water Supply and Treatment".

84. The treatment scheme is as follows:

(i) Aeration
(ii) Sedimentation
(iii) Clariflocculation
(iv) Filtration
(v) Disinfection

Table 8: Water Standards

Sl. No	Characteristics	Acceptable	Permissible
1	Turbidity (Units on J.T.U scale)	1	5
2	Colour (Units on Platinum Cobalt scale)	5.0	15
3	Taste and Odour	Agreeable	Agreeable
4	pH	6.5 to 8.5	No relaxation
5	Total dissolved solids (mg/l)	500	2000
6	Total hardness (mg/l) (as CaCO3)	200	600
7	Chlorides (as Cl) (mg/l)	250	1000
8	Sulphates (as SO4)	200	400
9	Fluorides (as F) (mg/l)	1.0	1.5
10	Nitrates (as NO3) (mg/l)	45	No relaxation
11	Calcium (as Ca) (mg/l)	75	200
12	Magnesium (as Mg) (mg/l)	30	100
13	Iron (as Fe) (mg/l)	0.3	No relaxation

Sl. No	Characteristics	Acceptable	Permissible
14	Manganese (as Mn) (mg/l)	0.1	0.3
15	Copper (as Cu) (mg/l)	0.05	1.15
16	Zinc (as Zn) (mg/l)	5	15
17	Phenolic compounds (as Phenol) (mg/l)	0.001	0.002
18	Anionic detergents (mg/l) (as MBAS)	0.2	1.0
19	Mineral Oil (mg/l)	0.01	No relaxation
20	Arsenic (as As) (mg/l)	0.01	0.05
21	Cadmium (as Cd) (mg/l)	0.01	No relaxation
22	Chromium (as hexavalent Cr) (mg/l)	0.05	No relaxation
23	Cyanides (as CN) (mg/l)	0.05	No relaxation
24	Lead (as Pb) (mg/l)	0.1	No relaxation
25	Selenium (as Se) (mg/l)	0.01	No relaxation
26	Mercury (total as Hg) (mg/l)	0.001	No relaxation
27	Poly nuclear aromatic hydrocarbons (PAH)9 (ug/l)	0.000 1	No relaxation
30	Piped water supplies (treated water entering the distribution system)		
30.1	Faecal coliforms number/100 ml	0	No relaxation
30.2	Coliform organisms' number/ 100 ml	0	No relaxation

85. **Clear water underground sump at WTP.** The capacity of the clear water sump shall be designed/maintained such that, adequate buffer is made to have a balance between WTP (from source) and pumping to service reservoirs (to distribution). Considering the WTP operation hours and reliability, storage capacity (800 KL) having 2 hours retention time of total demand is proposed.

Table 9: Clear Water Underground sump at WTP

GL	43.50	m
Elevation Base (LWL)	39.0	m
Total Daily Water Supply	9.00	MLD
23 hr pumping		
Hourly Supply	391.30	cum/hr
Considering 2 hours retention time as storage capacity	782.61	KL
Say the final capacity of tank is	**800.00**	**KL**

86. **Clear water pumphouse at WTP.** Pumping station at WTP is proposed to convey water from clear water underground sump at WTP to elevated service reservoirs in three (3) zones.

87. Duration of Pumping: The pumping operation for raw water pumps and clear water pumps is considered to be 23.0 hours daily, as suitable power back up has been ensured.

88. Standby for Pumping Machinery

- In case of low-capacity pumps - 100%
- In case of high-capacity pumps - 50%

89. An associated pump house is proposed at clear water sump to house the pump sets and all other electromechanical equipment for pumping water from clear water sump to proposed Overhead service reservoirs (OHSRs) for three (3) zones.

90. The details of pump sizing for clear water requirement are as below:

Pump sizing for Rising Main	Unit	Data
Clear water requirement	Cum/day	9000
Pumping hours		23.0
Design discharge	Cum/sec	0.11
Total pumping head	M	48.0
Pump efficiency		75%
Size of pump	KW	67.5
Size of pump with 10% overloading and losses in thrust and shaft bearings	KW	75
Size of pump with 50% stand by	KW	75.0
Size of Pump (Say)	KW	75.0
Number of Pumps	No.	2 (1W+1S)

91. **Clear water transmission main.** Economic sizing of pumping main & Detailed Hydraulic modelling has been carried to arrive at pipe diameters and to arrive at required pressure head at designated OHSRs. Pumping main of 5.53 Km length using 150, 250 and 350 mm DI K9 is proposed to transmit the water from clear water sump to 2 OHSRs.

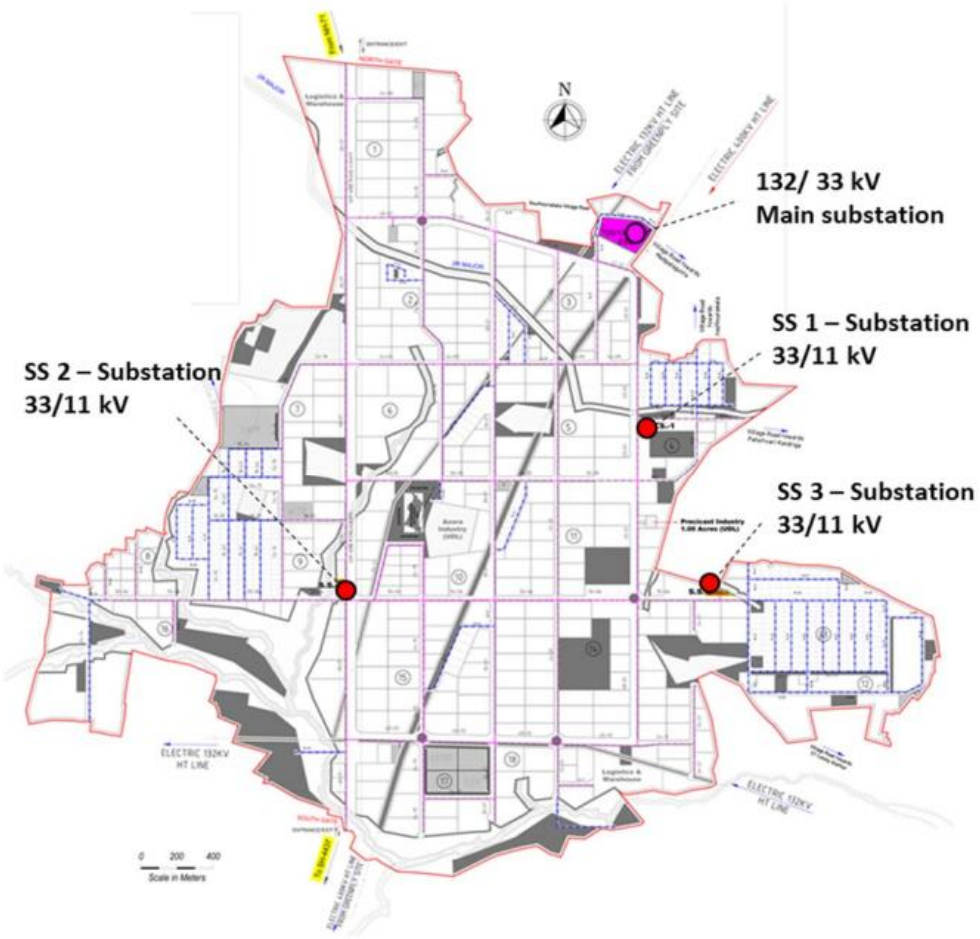
Table 10: Details of proposed Intermediation Pumping Station and Pumping main

IPS NO.	Capacity (MLD)	Rising main Reach	Pump Configuration	Head(M)	Rising Main Size	Length(M)
IPS-1	0.305	IPS-1 to MH no. 1615	3.7 KW (1 Working +1 Standby)	21	150mm dia DI K9	1070.00
IPS-2	0.827	IPS-2 to MH no. 1588	11 KW (1 Working + 1 Standby)	23	200mm dia DI K9	1350.00
IPS-3	0.515	IPS-3 to MH no. 1778	5.5 KW (1 Working +1 Standby)	14	200mm dia DI K9	580.00
IPS-4	0.510	IPS-3 to MH no. 1948	5.5 KW (1 Working +1 Standby)	19	150mm dia DI K9	550.00

4. Power Distribution

92. The power requirement during the operation phase of the proposed IP is ~94 MVA. Based on the demand, 132/33 kV Main substation is proposed within the project site. For the power supply to the industrial plots Three 33/11 kV substations are proposed in the project site.

Figure 11: Power Supply Network Plan



93. **Rainwater harvesting.** Rainwater harvesting (RWH) refers to collection of rain falling on earth surface for beneficial uses before it drains away as run-off. Rainwater harvesting and conservation practices reduce the soil erosion, increases soil moisture and enhance recharge to groundwater body.

94. Concept of rainwater harvesting lies in

(i) Tapping the rainwater from where it falls
(ii) Techniques of rainwater harvesting involve

95. Catch the rainwater from localized catchment surfaces such as roof of a house, plain and sloping ground surfaces etc. It is easy process to collect Rainwater and diverted into ponds, vessels or underground tanks to store for longer periods and to recharge by construction of RWH Structures in a suitable site.

96. Rainwater harvesting is in two ways

(i) Direct Use: The process of collecting and storing the rainwater by construction of sump through filters for future productive use and
(ii) Artificial recharge to groundwater: Recharge the rainwater in a scientifically planned way by construction of rain / roof top water harvesting structures to augment the groundwater.

97. Both methods of rainwater harvesting is recommended at Chittoor start-up area. Rainwater harvesting system shall be developed by individual industries and at common areas of I.P.

D. Proposed Components to be implemented by APIIC with GOAP or other funds

98. The infrastructure related to wastewater collection, conveyance and treatment, recycled water reuse, administrative buildings, ready built factory sheds etc., in the start-up area will be constructed by implementing agency APIIC with government or other funds. Per APIIC, these works will be taken up after the works funded under VCICIDP Project 2 are completed. List of components proposed to be funded by GOAP is given in the table below.

Table 11: Components proposed under GOAP / Other funding

Components	Description
Recycled Water Supply System	• 550 KL treated water underground sump • Pump house at treated water sump to house 3 numbers 40 KW (2W+1S) pumps. • Mechanical and Electrical works for pump station of 40 KW (2W+1S) including pumps and motors, valves, specials etc. • Pumping main of length 7.44 Km using 300 mm & 250 mm dia DI K9 pipes from treated water sump to OHSRs. • 2 number of overhead service reservoir with capacity 1100KL with staging of 16m Recycled water supply distribution network using 100 mm dia to 350 mm dia DI K7 pipes for length of 91.82 Km
Wastewater Conveyance system	• Wastewater collection (gravity) network of length 67.21Km using 150mm to 500 mm dia DWC pipe, including earthwork, pipeline, Manholes etc. as per the standard codes. • Wastewater pumping main of length 3550 m using 150 mm and 200mm dia DI K9 pipe • Plot connections using 110 mm dia UPVC pipe including earthwork, pepe line and connection chambers. • 4 Number intermediate pumping stations with all required ancillary works. Mechanical Works for all four pump stations with 2 X 3.7KW (1W+1S), 2 X 11 KW (1W+1S), 2 X 5.5 KW (1W+1S) and 2 X 5.5 (1W+1S) including pumps and motors, valves, specials etc.
Administrative Building	Office and Welfare Service Building (G+2 Floors) – 1911 sqm
Ready Built Factories	Flatted Factory Building (G+2 Floors) – 5900 sqm Standard Factory Shed (90mx52m) – 18720 sqm
Common Effluent Treatment Plant (CETP)	APIIC shall be constructing CETP using the DBOFT mode (Refer Appendix 27) after construction of the internal infrastructure in accordance with the MOEFCC Environmental Clearance requirements.
Entry / exit arches, green belt development, rainwater harvesting	2 main entry arches overall green belt development for the industrial estate Rainwater harvesting.
Other common facilities	As required to operationalize the industrial park

99. **Establishment of industrial, commercial, logistics and services**: APIIC on its part develops industrial parks, in this case Chittoor south start up area, for establishment of industrial units to manufacture a product or service units. The industrial parks will have basic infrastructure like developed open plots, internal roads, water distribution facilities sewage, power distribution, common effluent treatment facilities, communication facilities such other facilities as may be required.

100. Subsequent to development of basic infrastructure and amenities, APIIC allots vacant developed plots and factory sheds for establishment of industries, allied facilities, services, commercial establishments etc., These allotments will be made as per the regulations enforce (APIIC Industrial Parks Allotment Regulations, 2020). As per the regulations, these plots/industrial premises are allotted, based on the application made in the prescribed format, to an individual or group of individuals under Indian Partnership Act, 1932 or a company registered under Indian Companies Act, 1956 or Limited Liability Partnership Act, 2008 or cooperative institution or a body incorporated under any Act of Indian law, established for the purpose of industrial activity/service.

101. **Industrial area management.** APIIC is responsible for establishment and operation and maintenance of industrial park and establishes an Industrial Area Local Authority (IALA) for each industrial area/park for this purpose. APIIC is organized in the form head office, headed by managing director, and zonal offices, one for each zone, headed by Zonal Managers. For management of industrial parks, under each Zone, APIIC establishes IALA, headed by a commissioner or executive officer, who is the Industrial Park Manager (IPM). IPM works under the supervision of Zonal Manager and is responsible for all aspects of industrial park development and operation. Industrial Park management team shall have staff for asset management, infrastructure management, revenue collection etc.,

102. Member industries and service agencies are responsible for the establishment and operations of respective units in compliance with the applicable regulations, including EIA Notification 2006, and other regulations related to air, water, noise, hazardous waste, solid waste, health and safety, labour welfare etc. APIIC has conducted an EIA study for the overall industrial area and obtained environmental clearance from the MOEFCC. APIIC will ensure that industrial development is as per the environmental clearance issued. APIIC will also prepare and implement disaster management plan in coordination with other government agencies and industries. Individual industries, depending on the type and scale of operation, will conduct EIA study if required and obtain EC for their individual operations, and will obtain consent to establish (CTE) and consent to operate (CFE) from APPCB. Industries will also obtain other necessary permissions and licenses and will be responsible for compliance. Member industries shall monitor all environmental parameters such as emissions, air quality, noise levels, treated wastewater, water quality, etc., within their industry premises as per the stipulations laid by APPCB and/or MOEFCC in their respective Environmental Clearance, CFE and CTO.

E. Existing waste management facilities to be utilized by industrial area

103. **Waste Management (Hazardous and Municipal) System.** The proposed industrial cluster will utilize existing waste management facilities approved by Central Pollution Control Board (CPCB) and operating in the state of Andhra Pradesh. MSW generated from the proposed Industrial Park is estimated to be ~15.0 tons per day (TPD) and Industrial solid waste including hazardous and non-hazardous waste is estimated to be ~102 TPD (51 TPD of hazardous waste, 30 TPD of recyclable waste and 21 TPD of non-hazardous waste). 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. For non-hazardous and biodegradable wastes generated during the industries operations, APIIC will mandate each industry to have its waste management arrangements either through

authorised recyclers or their own internal arrangements for recycling or other means such as composting facilities etc. Hazardous waste generated by industries and facilities like treatment plants, etc will be sent to the existing hazardous waste management facility for treatment, storage and disposal set up and operated with the consent of pollution control boards. These are known as “Treatment, Storage, and Disposal Facility (TSDF). The nearest TSDF to the proposed industrial cluster is near Raviguntapalli, Nellore which is 60 km north of the project site. This TSDF facility gave consent for accepting hazardous waste from member industries of the industrial cluster. Industries shall follow Hazardous and Other Waste (Management and Transboundary Movement) and amendment thereof, 2016. Please refer Appendix 22 and Appendix 2 Environmental Clearance (para 5). Details of the TSDF at Raviguntapalli provided below.

104. **TSDF at Raviguntapalli**. the nearest TSDF is Coastal Waste Management Project (CWMP), Unit: 2 (A Division of Mumbai Waste Management Limited) at Raviguntapalli village in Nellore District Andhra Pradesh. CWMP is an Integrated Common Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities including incineration. This was established by a private agency with the support of GOAP to support industrial growth. The land for the CWMP is 19.5 Ha (48.0 acres). Phase I facilities include: (i) Secured land fill for 548 TPD (tons per day), (ii) Treatment/Stabilization 383 TPD; (iii) Biomedical waste 12.5 TPD (50000 beds), (iv) E waste 82 TPD, (v) spent solvent recycling 27 KLPD, (vi) Used Oil recycling 54 KLPD, (vii) used lead acid batteries recycling 65 TPD, (viii) Alternate fuel and raw material 55 TPD are proposed to be handled. Whereas in Phase II waste plastics recycling 27 TPD, waste paper recycling 54 TPD, incinerator 55 TPD. And in Phase III power generation of 2 MW with using renewable energy and 2 MW with waste to energy plants are proposed.

105. CWMP obtained the environmental Clearance on 6 January 2017 from MOEFCC and CTO (consent to operate) on 10 October 2018 from APPCB. APIIC obtained confirmation and acceptance of CWMP to accommodate the hazardous waste from Chittoor Node – Srikalahasthi Industrial Cluster given as **Appendix 22**. As per the confirmation letter issued by CWMP, the facility has sufficient capacity to accommodate hazardous waste from the industrial cluster.

Figure 12: Route to CWMP (TSDF) at Raviguntapalli, Nellore

F. Proposed Implementation Schedule

106. The subproject is currently at bidding stage. The bidding process is likely to be completed and contracted awarded by May-June 2023. Constructions likely to start in July-August 2023 and will take 36 months to complete (July-Aug 2026).

107. Per APIIC, works related to the infrastructure to be funded by GOAP will be initiated after this. APIIC will schedule the works such that necessary infrastructure is made operational before the member industries start operation. APIIC will allot the developed plots for individuals or companies for establishment of industries, services etc., after the development industrial park with all necessary facilities and amenities.

IV. DESCRIPTION OF ENVIRONMENT

108. A brief description about the existing environment, including its physical and ecological resources of the region is presented in this section. Broad aspects at district level on various environmental parameters (topography, geology, soil, topography, climate, land use, water resources, water quality, air quality, noise quality, tourism, cultural resources etc.) which are likely to be affected (direct or indirect) by the proposed Chittoor Node South cluster start up industrial area project are covered. These aspects are covered in broader geographic extent to present the entire project region.

109. Chittoor District as Project Influenced Area (PIA) District and 10 km radius as general study area is considered. Secondary data pertaining to study area is collected and analysed to represent the baseline environment. The baseline data carried out for the Post Monsoon season (October 2018 to January 2019).

A. Physical Environment

1. Topography

110. The district forms a part of the Mysore plateau. The western and southwestern parts comprising Kuppam, Palamaneru, Punganur, Thamballapalle and Madanapalle areas have an altitude between 600 and 900 m @msl. The altitude of central region comprising Bangarupalem, Chittoor, Piler, Vayalpad, Chandragiri areas has 300 to 600 m @msl. The eastern/southern parts covering parts of Puttur, Karvetinagar, Satyavedu, Tottambedu and Srikalahasti areas have an altitude of less than 300 m @msl. This indicates that the elevation in the district is highly variable and having steep slopes.

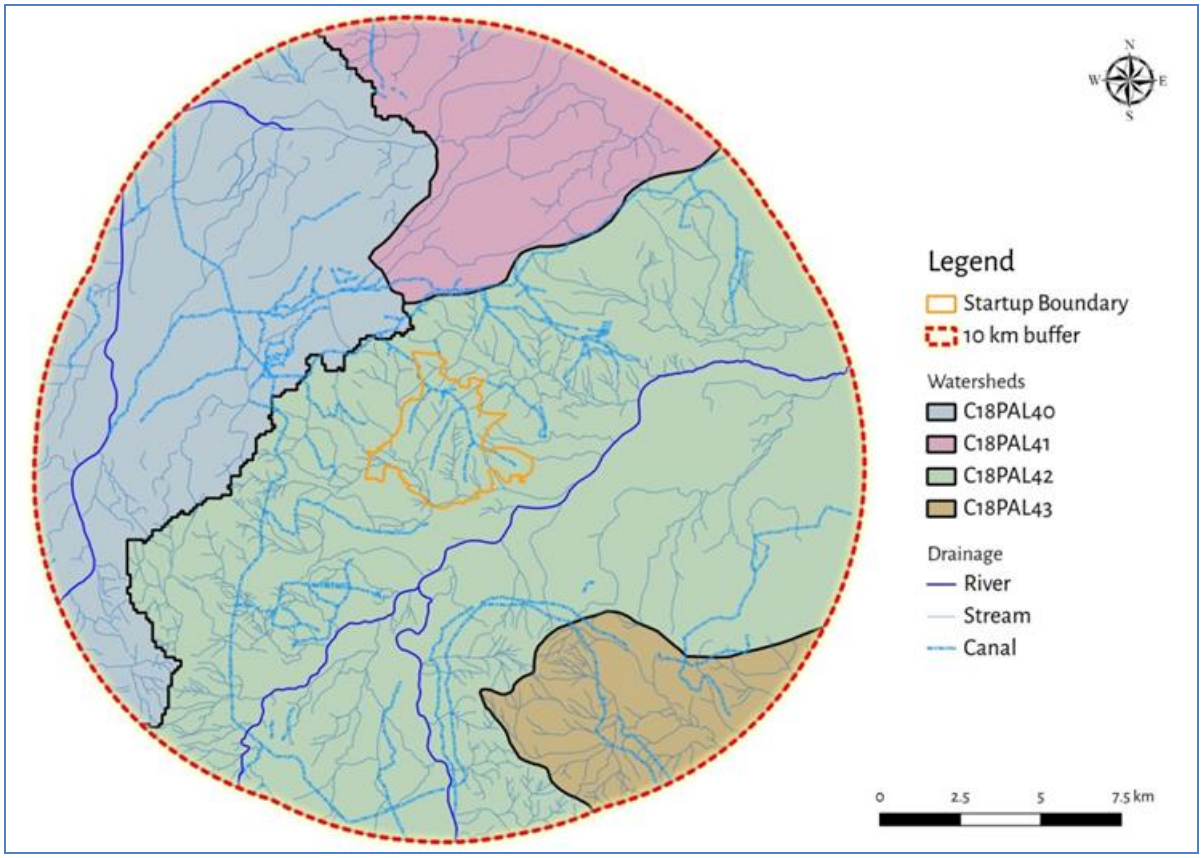
111. The majority of the project site falls on ridge line and the elevations are varying overall from 30 to 60 m terrain is not flat, undulations are noticed. Higher terrains are noticed at the Northwest part of the project site and the lower terrains are noticed at the southeast part of the project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

2. Drainage

112. There are no major rivers in the district. Most of the rivers are ephemeral in nature carrying large quantities of water immediately after precipitation. The drainage is generally sub articulate to sub-parallel following straight courses. The important drainage basins are Bahuda, Pincha, Swarnamukhi, Palar, Ponnai and Araniyar. The Bahuda and Pincha are north flowing rivers, Swarnamukhi is east flowing, Palar is southeast flowing Ponnai towards south and Araniyar is southeast flowing. The drainage is dendritic to sub-dendritic and drainage courses are first order, having well defined courses traversing discontinuously with scattered cultivated agricultural fields. The important rivers are Swarnamukhi and Kalinga. The drainage in the area is ephemeral type, carrying large quantities of water immediately after rain. The drainage pattern is dendritic to sub-dendritic.

113. 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. The drainage pattern of the Study area is given below.

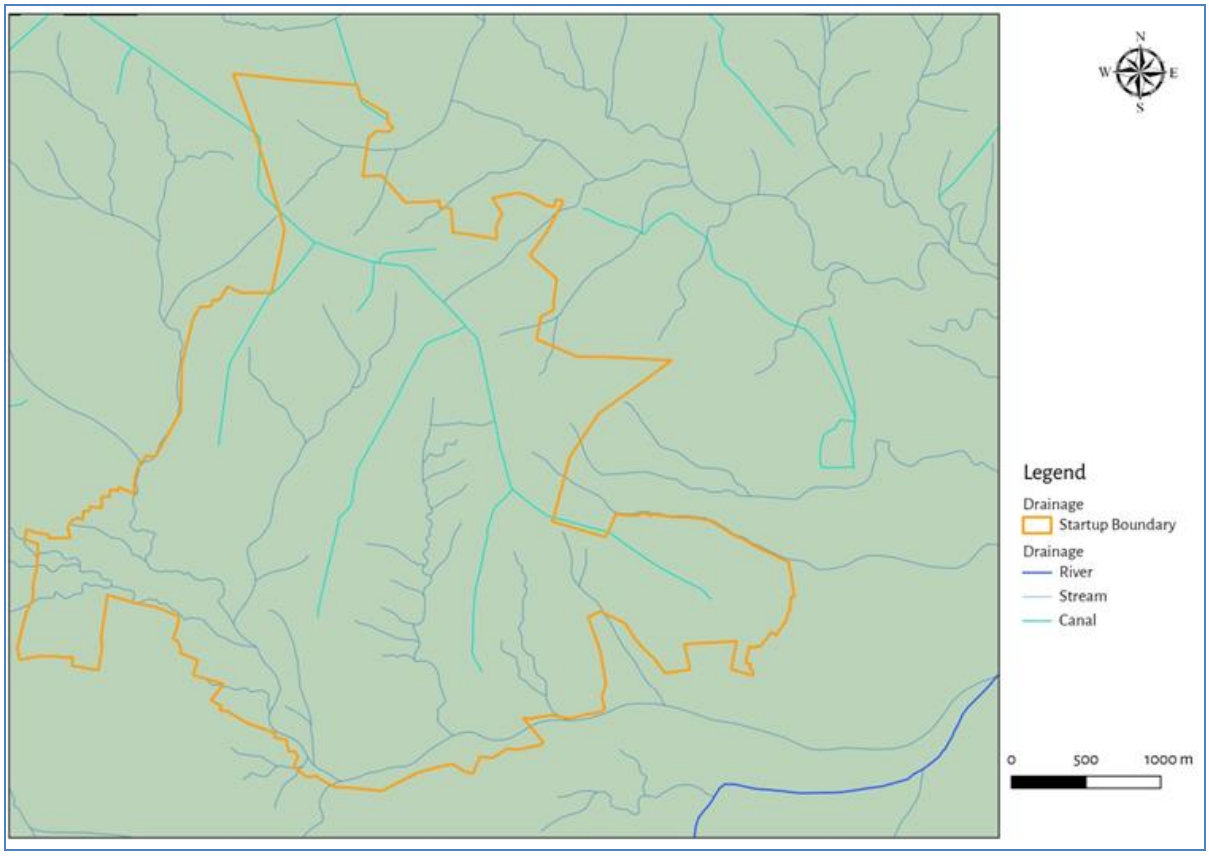
Figure 13: Drainage pattern of Study Area



114. 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.

115. Kalangi River flows along the southern side of the project site at an approximate distance of 1km. Its river continues its course to join into Pulicat lake. In the Northern side of the Project site at a distance of 6 km 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. The drainage pattern of the project site is given below.

Figure 14: Drainage pattern of Project Site



3. Geology

116. The district is underlain by formations of archaean, proterozoic, Jurassic cretaceous tertiary and quaternary ages. The oldest rocks in the area belong to migmatite complex, represented by migmatised quartzo-felspathic gneiss and are exposed in the north-eastern part of the district. Older metamorphics comprise amphibolites, hornblende-talc-mica-schist, fuchsite quartzite, calc-sillicate rock, marble and banded ferruginous quartzite. These older metamorphics occur as enclaves within Peninsular Gneissic Complex (PGC). The PGC comprises a complex assemblage of gneissic variants and granitic rocks, which occupy almost major part of the district. The granite plutons are exposed as patches and linear bodies in south-western and north-western parts of the district respectively. The basic dykes include dolerites. The southern tip of the well-known Cuddapah basin falls in the north-eastern part of the district. Shale and quartzite of Bairenkonda formation, shales/phyllite and limestone of Cumbum formation are exposed in the district. The rocks of Gondwana super group occur no conformably over the PGC in south-eastern part of the district, represented by satyavedu formation (under Gondwana) and comprise, ferruginous quartzite and conglomerate with plant fossils. Laterite capping's occur over Gondwana formations. Large tracts of alluvium occur along the major streams, which belong to recent age.

4. Hydrogeology

117. More than 90% of the district is underlain by crystalline formations and the remaining area by semi-consolidated formations. The degree and depth of weathering varies from place to place in crystalline formations and hence the potentiality of shallow aquifers also varies. Ground water occurs under unconfined conditions in weathered portion and semi-confined to confined condition occurs in fractures, joints at deeper depths. The deep ground water is generally alkaline. The deep waters are generally suitable for agricultural and

irrigation purposes. The mandals falling within the study area and the status of groundwater development is given in Table 12 below.

Table 12: Groundwater Development Status in the Study Area

Mandal Name	Groundwater Development Category
Srikalahasti	Safe
Thottambedu	Semi-critical
K.V.B.puram	Safe
Doravarisatram	Safe
Balayapalle	Safe
Venkatagiri	Safe
Naidupet	Safe
Buchinaidu kandriga	Safe
Ojili	Safe
Pellakur	Safe
Varadaiahpalem	Safe
Sullurpeta	Safe

118. Most of the mandals in the study area are falling in Safe Category except Tottambedu Mandal wherein the groundwater category is classified as Semi-Critical. The start-up area is coming under Tottambedu Mandal. No groundwater is proposed for industrial use.

5. Meteorology

119. The nearest Indian Meteorological Department (IMD) station located to project site is Tirupati. The Climatological data for Tirupati (13004' N and 790 23' E), published by the IMD, based on daily observations at 08:30 and 17:30 hour IST for a 20-year period (1981-2000), is presented in the following sections on the meteorological conditions of the region. The monthly variations of the relevant meteorological parameters are reproduced below.

Table 13: Climatological Summary – Tirupati (1971-2000)

Month	Temp (°C)		Rainfall (mm)		Relative Humidity (%)		Station Level Pressure hPa		Mean Wind Speed (km/h)	Predominant Wind Directions (From)*	
	Daily Max.	Daily Min.	Total	No. of days	08:30	17:30	08:30	17:30		08:30	17:30
Jan	29.9	18.7	17.9	0.9	78	54	1103.3	999.5	8.9	SW, W	NE, E
Feb	32.8	20.1	17.8	0.9	73	45	1001.7	997.6	9.0	SW, S	NE, E
Mar	36.7	22.6	2.2	0.4	68	37	1000.0	995.2	9.6	SW, S	NE, E, S
Apr	39.3	26.2	12.9	0.9	64	36	997.4	992.5	10.8	SW, W	S, NE, E
May	40.3	27.9	44.7	2.4	58	38	994.6	990.3	10.2	SW, S	E, SW
Jun	37.8	27.2	76.1	4.6	58	45	993.0	989.2	10.0	SW, W	W, SW
Jul	35.7	25.9	127.1	8.6	66	51	993.9	990.2	8.4	SW, W	W, SW
Aug	34.8	25.5	137.4	8.1	68	53	994.7	990.9	8.2	SW, W	W, SW
Sep	34.8	25.1	139.5	7.0	71	57	996.2	992.1	6.9	SW, W	NW, SW, W
Oct	32.7	23.5	152.2	7.4	76	64	998.5	994.8	7.1	SW, W, NW	NE, N
Nov	30.1	21.7	260.2	9.7	79	68	1001.0	997.6	9.4	NE, N	NE, N
Dec	28.9	19.9	146.0	5.7	80	65	1003.6	999.9	10.4	NE, N	NE, E

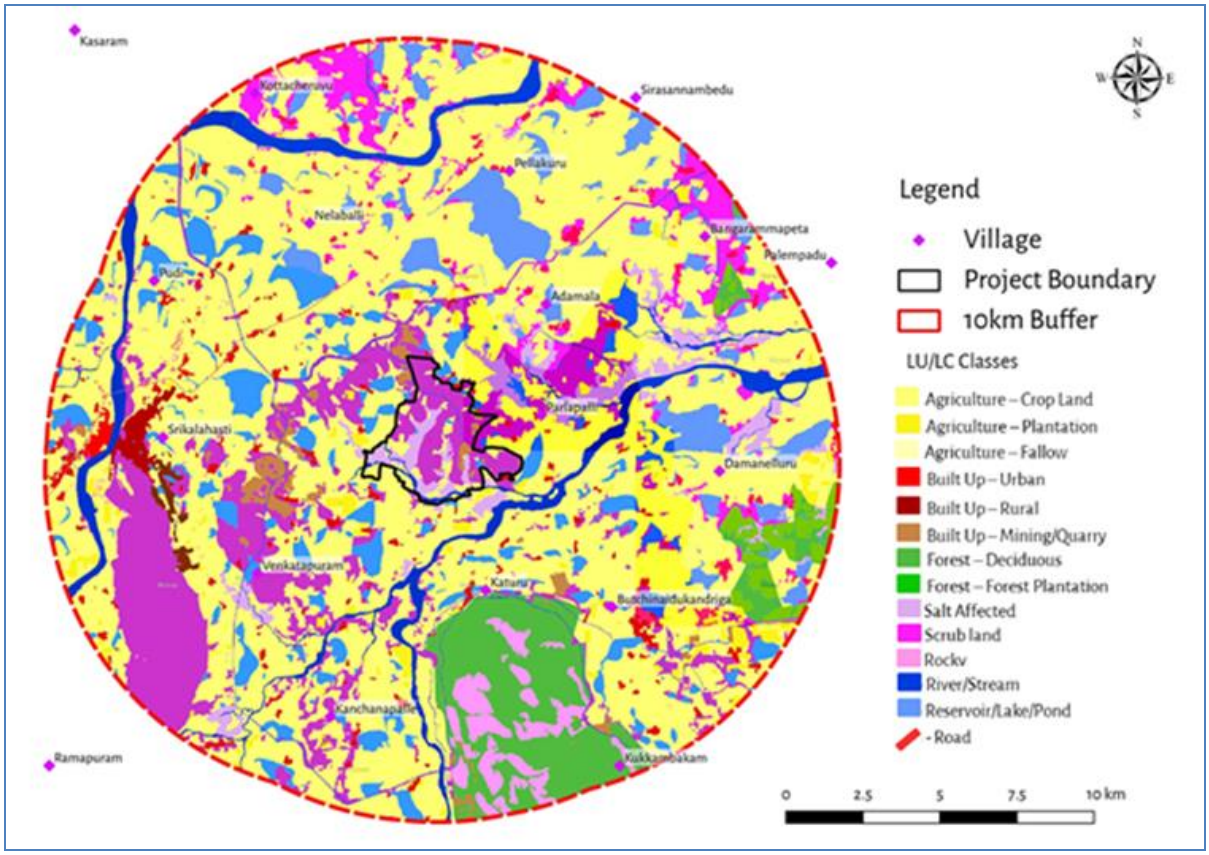
120. As per the above Climatological table the observations drawn for the study area are given below.

(i) Daily maximum and temperature are 40.30C and the daily minimum temperature is 18.70C were recorded in the months of May and January respectively
(ii) Maximum and minimum relative humidity of 80% during the months of December, 36% were recorded in the month of April respectively
(iii) Monthly average Maximum and minimum rainfall of 260.2 and 2.2 mm was recorded in the months of November and March respectively. Annual Total or Mean rainfall recorded is 1133.9 mm
(iv) Maximum and minimum Mean wind speed is 10.8 kmph and 6.9 kmph
(v) Predominant wind direction is observed as Southwest followed by Northeast

6. Land Use

121. The existing land use covering 10km radius from the project 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 provided below.

Figure 15: Land Use Covering 10.0 km Radius from Project Site



122. 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, mining/quarrying area and habitations. Clearance of vegetation and buildings shall be carried out as per project requirement. Sasthriyanadhi Settlement and Industries such as Axora resources industry and Preci cast industry is falling within the proposed area and integrated in the master plan.

7. Project Site and Surroundings Salient Features

123. The Primary information of the site is studied through satellite images and also the secondary information indicates that the site is contiguous and relatively large land parcel.

124. The settlements are noticed at the Northeast part of the project site in Routhusuramala 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. Sastriyanadhi Colony with a school is noticed within the start-up area.

125. The Sasthriyanadi with elementary school is noticed inside the delineated area, in the middle of the project site and also infront of the Axora Resources – Industry. Green Buffer or resettlement of existing settlements should be carried out for the welfare of the people and also to utilise the industrial land effectively.

126. 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.

8. Ambient Air Quality

127. The Ambient Air quality monitored in the study area at the following Ten (10) locations during the EIA study. This baseline survey was carried out during post-monsoon season i.e., October 2018 – January 2019. The concentrations of PM2.5, PM10, SO2, NO2 are observed to be well within the NAAQ standards, 2009 prescribed by Central Pollution Control Board (CPCB) for industrial and rural /residential zone and O3, CO, NH3, Pb, C6H6, BaP, As, and Ni were observed below detectable limits in all the locations. Graphically presented in Figure 16 to 19.

Station Code	Location	Distance (km)from Project boundary	Azimuth Directions	Environmental Setting
AAQ1	Project Site (Sastriyanadhi colony)			Residential
AAQ2	Routhsurmala	0.3	N	
AAQ3	Kottapalem	0.6	S	
AAQ4	B.S Puram	1.1	W	
AAQ5	Palletivarikandriga	1.2	E	
AAQ6	Vedalasrinivasapuram	1.7	S	
AAQ7	Parlapalle	1.9	SSW	
AAQ8	Dasarimitta	2.9	NNW	
AAQ9	Punabaka	2.9	N	
AAQ10	Ardamala	3.5	NE	

Source: EIA Study conducted for the Industrial Estate for Environmental Clearance.

Table 14: Ambient Air Quality

Ambient Air Quality Parameters	Minimum Concentration ($\mu g/m^3$)	Maximum Concentration ($\mu g/m^3$)
PM_{10}	33.6	54.4
$PM_{2.5}$	16.2	28.2
SO_2	4.0	6.6
NO_2	11.3	17.8

Figure 16: Ambient PM_{10} Levels

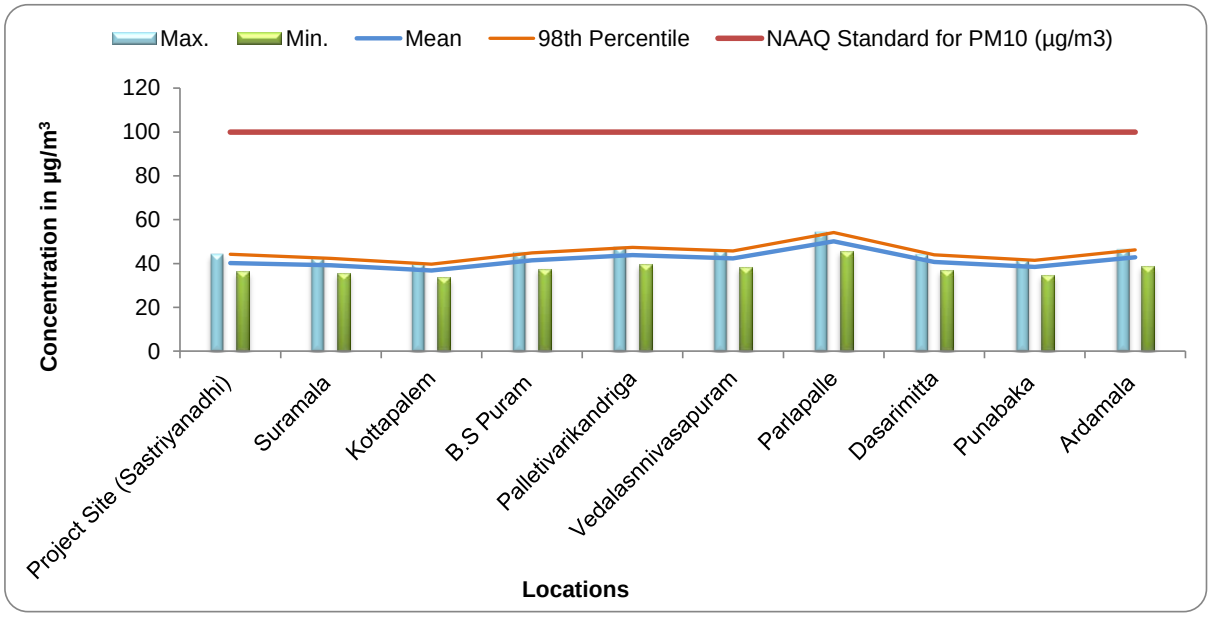


Figure 17: Ambient $PM_{2.5}$ Levels

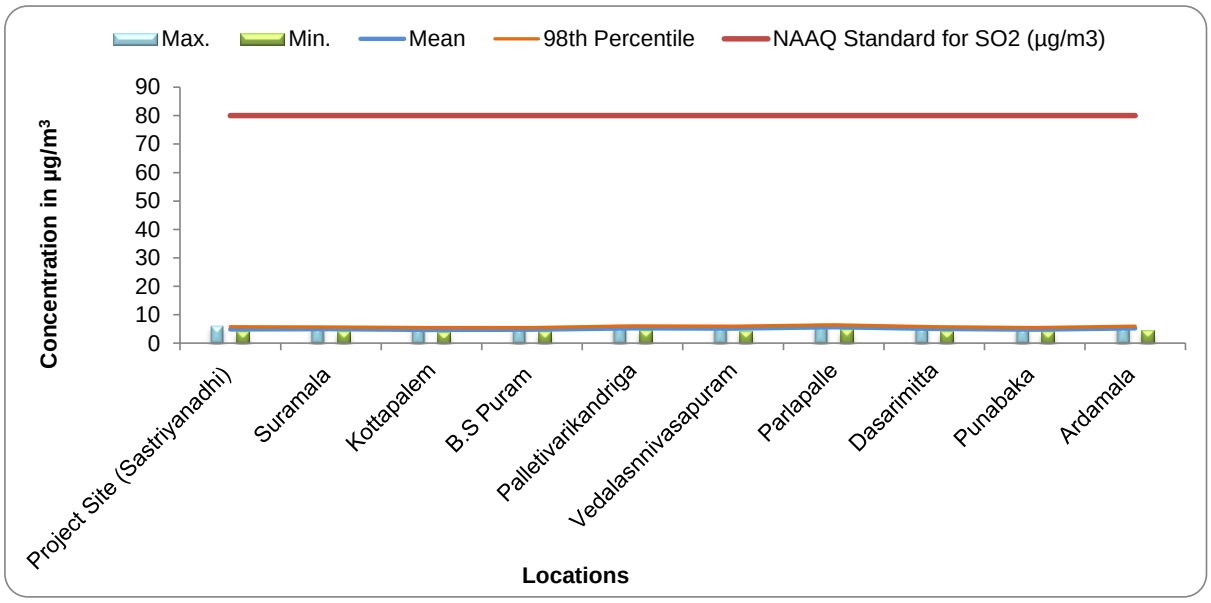


Figure 18: Ambient NO_2 Levels

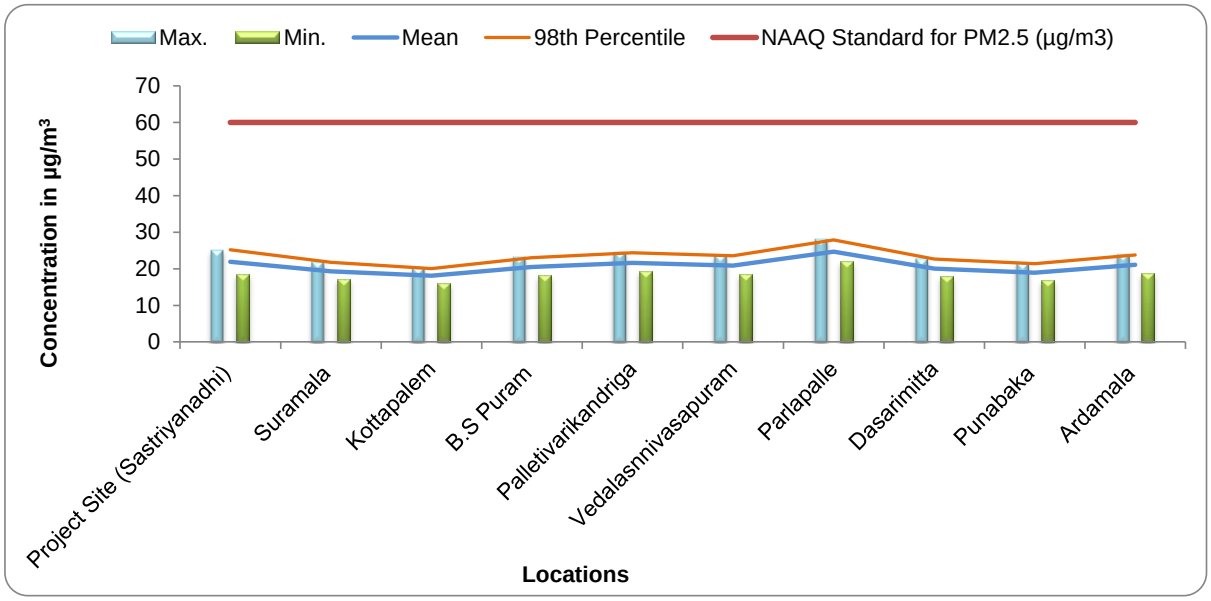
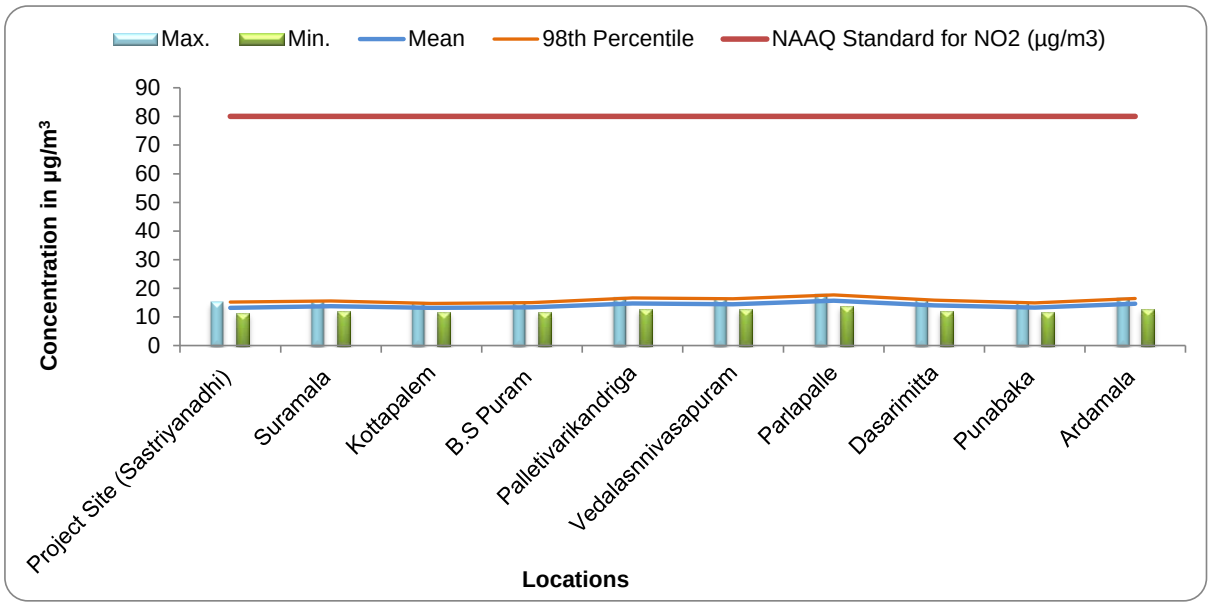


Figure 19: Ambient O_3 Levels



9. Noise Levels

128. Noise Levels monitored in the study area at Nine (11) locations were monitored.

(i) The daytime noise levels at all the locations were ranged in between 44.38 dB(A) to 53.98 dB (A)

(ii) The night-time noise levels were ranged in between 33.16 dB(A) to 41.04 dB (A)

129. Noise monitoring results reveal ambient noise levels in all the locations are well within the limits as per CPCB ambient noise standards and presented in Figure 20 to 21**.** The baseline survey was carried out during post-monsoon season i.e. October 2018 – January 2019.

Day and Night Equivalent Noise Levels

S. No	Location	Distance (km) from Project boundary	Azimuth Directions	Environmental Setting
1.	Project Site (Sastriyanadhi Colony)			Residential
2.	Routhsurmala	0.3	N	
3.	Kottapalem	0.6	S	
4.	B.S Puram	1.1	W	
5.	Palletivarikandriga	1.2	E	
6.	Pallamala	1.5	S	
7.	Vedalasrinivasapuram	1.7	S	
8.	Parlapalle	1.9	SSW	
9.	Dasarimitta	2.9	NNW	
10.	Punabaka	2.9	N	
11.	Ardamala	3.2	NE	

Source: EIA Study conducted for the Industrial Estate for Environmental Clearance.

Figure 20: Ambient Day time Noise levels

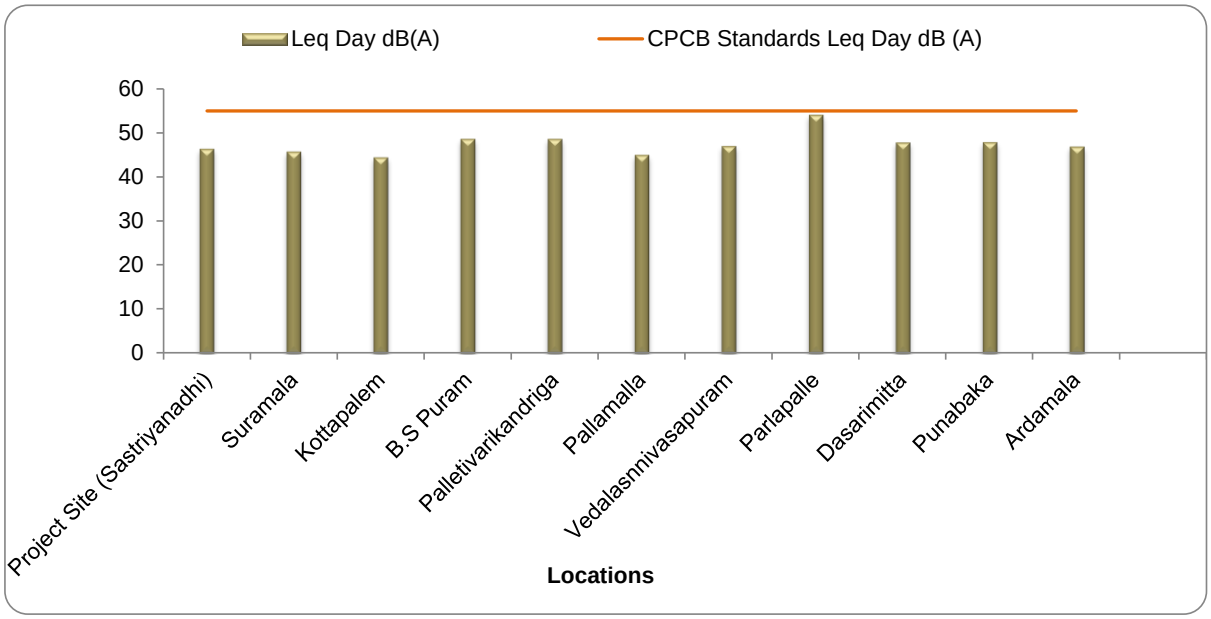
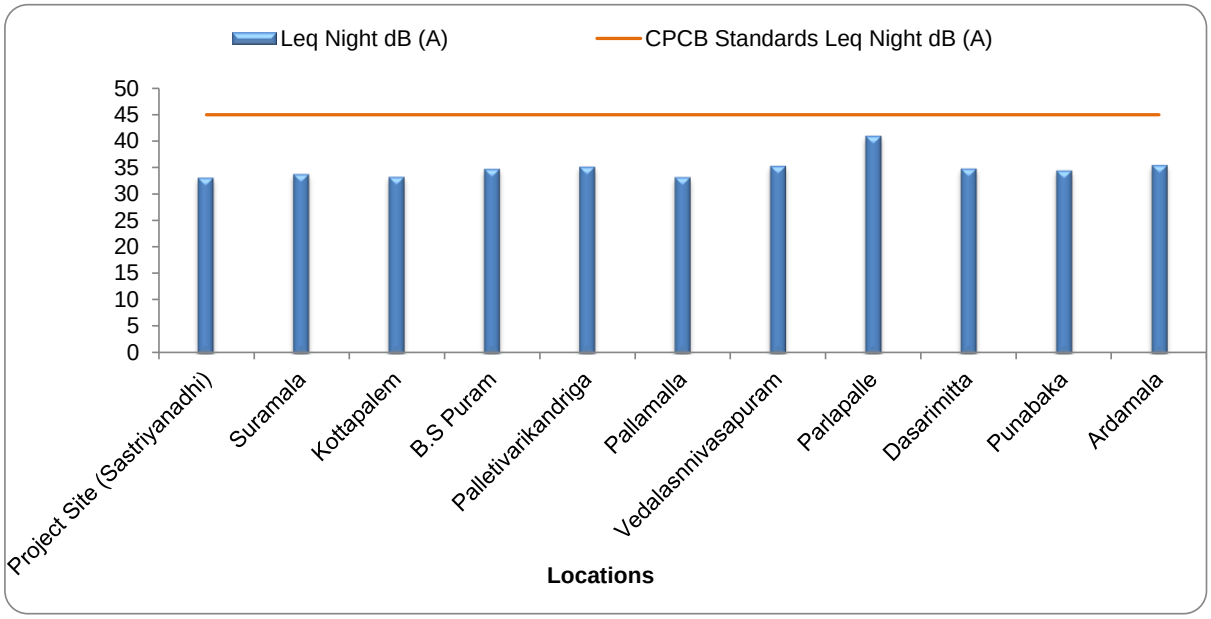


Figure 21: Ambient Night equivalent Noise levels



10. Water Quality

130. Following ten (10) ground water monitoring locations were identified for assessment in different villages around the project site based on the usage of ground water by the settlements/ villages in the study area. Surface water bodies were identified during the survey period. The following seven (07) Surface water monitoring locations were identified for assessment based on the usage of surface water in the study area.

Station Code	Location	Distance (km) from Project boundary	Azimuth Directions	Sampling Source	Water Utilities
Groundwater					
GW -1	Project Site (Sastriyanadhi Colony)			Well	Drinking, Washing and Bathing
GW -2	Routhsurmala	0.3	N	Hand pump	
GW -3	Kottapalem	0.6	S	Hand pump	
GW -4	B.S Puram	1.1	W	Hand pump	
GW -5	Palletivarikandriga	1.2	E	Hand pump	
GW -6	Vedalasrinivasapuram	1.7	S	Bore water	
GW -7	Parlapalle	1.9	SSW	Hand pump	
GW -8	Dasarimitta	2.9	NNW	Bore water	
GW -9	Punabaka	2.9	N	Hand pump	
GW -10	Ardamala	3.5	NE	Hand pump	

Station Code	Location	Distance (km) from Project boundary	Azimuth Directions	Remarks
SW1	Project Site (Sastriyanadhi)			Washing
SW2	Near Routhsurmala	0.8	N	
SW3	Near B.S Puram	0.8	W	
SW4	Near Tangellapuram	1.8	W	
SW5	Near Suddametta	1.8	S	
SW6	Near Alattur	2.6	E	
SW7	Near Ravulapadu	6.1	N	

Source: EIA Study conducted for the Industrial Estate for Environmental Clearance. Monitoring conducted during post monsoon Oct 2018-Jan 2019).

Table 15: Surface Water Quality

Water Quality Parameters	Unit	Minimum Concentration	Maximum Concentration
pH	-	7.54	8.36
Electrical conductivity	µS/cm	142	1211
Dissolved oxygen	mg/l	2.2	4.6
Total Hardness	mg/l	30	190
Chloride	mg/l	15	170
Sulphates	mg/l	4.7	95.1
Fluoride	mg/l	0.18	0.74
Total coliform	MPN/100ml	940	12000
Cyanides and phenolic compounds	mg/l	below detection limits	

131. The surface water quality in the study area does not indicate any industrial contamination.

Table 16: Ground Water Quality

Water Quality Parameters	Unit	Minimum Concentration	Maximum Concentration
pH	-	6.7	7.7
Turbidity	NTU	1.86	3.2
Electrical conductivity	µS/cm	704	3286
Total Hardness	mg/l	190	1230
Calcium	mg/l	40	384
Magnesium	mg/l	21.6	64.8
Total dissolved solids	mg/l	486	2268
Chloride	mg/l	90	820
Sulphates	mg/l	15.1	258.6
Fluoride	mg/l	0.64	0.99
Nitrates	mg/l	5.3	323.6
Iron	mg/l	0.14	0.32
Zinc	mg/l	0.05	0.22
Total coliform	MPN/100ml	absent	absent
Cyanides and phenolic compounds	mg/l	below detection limits	

132. Based on the above results, it is evident that all of the parameters in ground water fairly meet the desirable standard limits of IS: 10500. The ground water quality in the study area does not indicate any industrial contamination.

11. Soil Quality

133. In the district 57% of the area is covered by Red loamy soils, 34% by red sandy soils. Remaining 9% is covered by black clay (3%), black loamy (2%), black sandy (1%) and red clayey (3%). Soil quality monitored in the study area at the following Eleven (11) locations. The baseline survey was carried out during post-monsoon season i.e. October 2018 – January 2019.

Station Code	Location	Distance (km) from Project boundary	Azimuth Directions
S1	Project Site		
S2	Routhsurmala Village	0.3	N
S3	Kothapalem Village	0.6	S
S4	B S Puram Village	1.1	W
S5	Palletivarikandriga Village	1.2	E
S6	Pallamala Village	3.2	NE
S7	Vedalasrinivasapuram Village	1.5	S

Station Code	Location	Distance (km) from Project boundary	Azimuth Directions
S8	Parlapalle Village	1.7	S
S9	Dasarimitta Village	1.9	SSW
S10	Punabaka Village	2.9	NNW
S11	Adramala Village	2.9	N

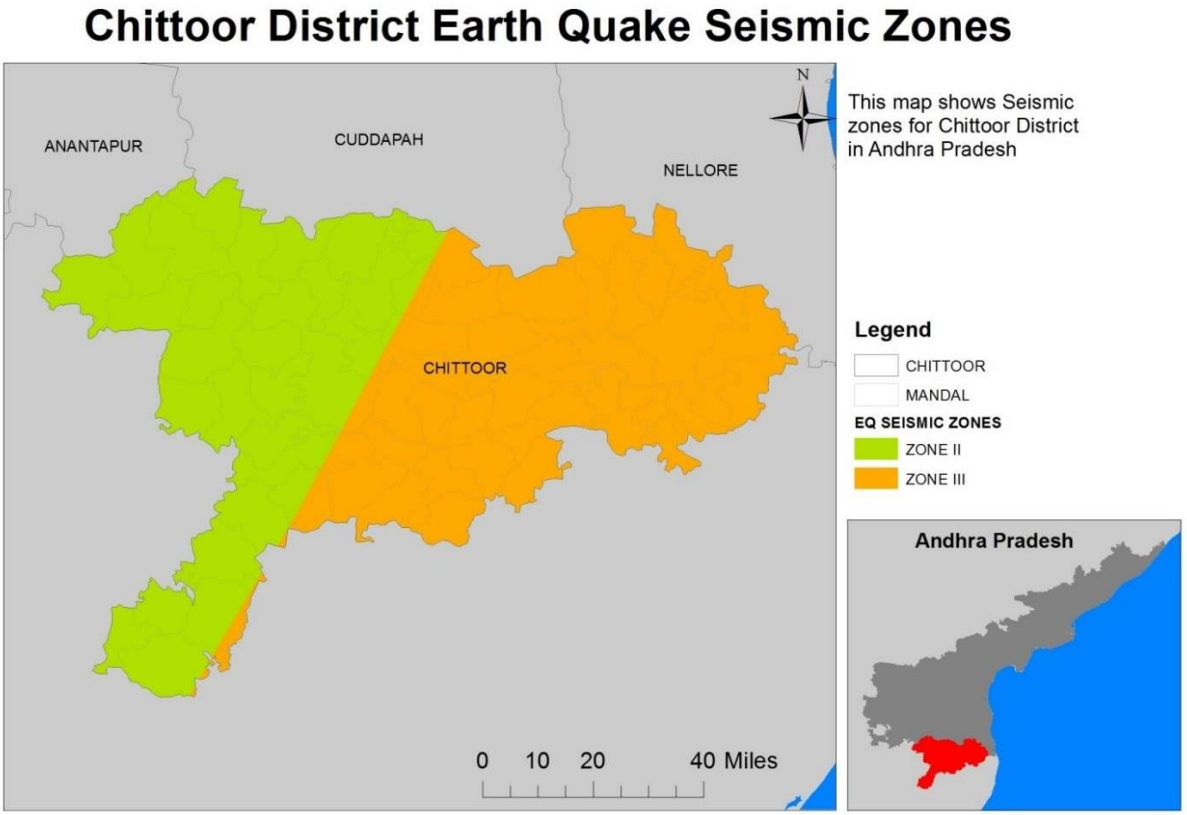
Source: EIA Study conducted for the Industrial Estate for Environmental Clearance.

Table 17: Soil Quality

Soil Quality Parameters	Unit	Minimum Concentration	Maximum Concentration
pH	-	6.84	8.12
Electrical conductivity	µmhos/cm	106	240
Nitrogen	kg/ha	316	428
Phosphorus	kg/ha	36	60
Potassium	kg/ha	108	168

12. Earthquake Zone:

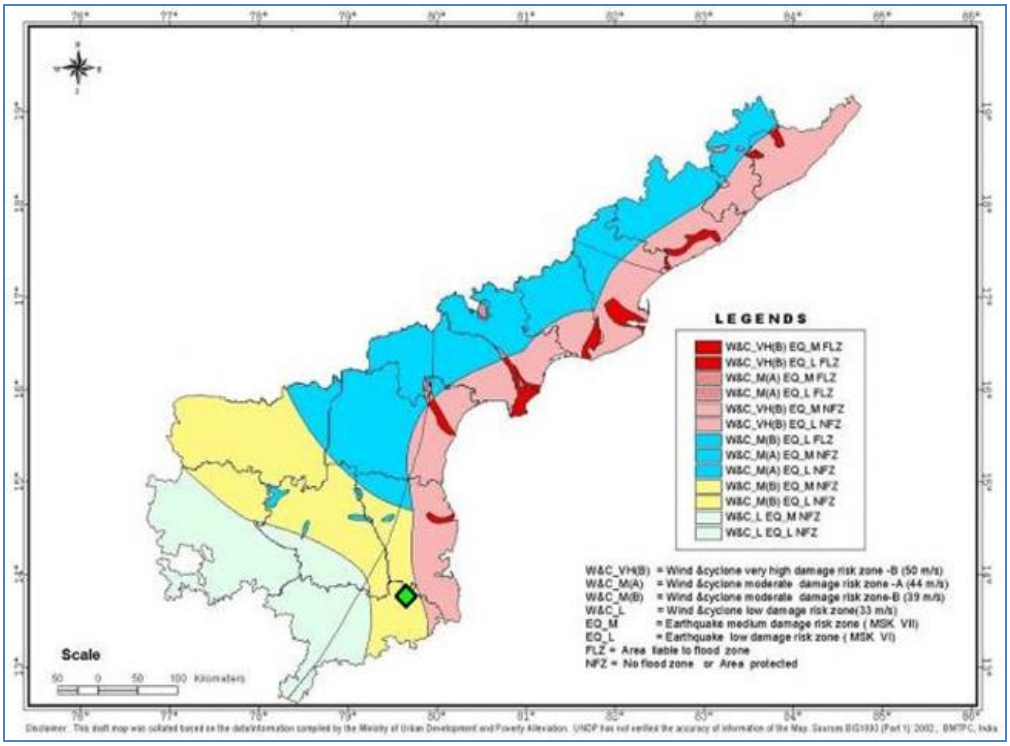
134. The project area falls under Seismic Zone-3, Moderate seismic zone.



13. Multiple Hazard Zonation:

135. As per the draft map prepared by Ministry of Urban Development and Poverty Alleviation, the project site is falling in Wind and Cyclone Moderate Risk Zone (50 m/s) and Earthquake Medium Damage Risk Zone and No Flood Zone.

Figure 22: Multiple Hazard map



B. Biological Environment

1. Vegetation

136. In the district the forests cover 30% of the total area which includes open forest (60.98%), moderate dense forest (38.72%) and very dense forest (0.29%). Forest type noticed in the district are Red sanders bearing Dry deciduous forests, Hardwickia type such as Dry Savananah having timber yielding and Scrub forest along with herbaceous flora which are falling under Seshachalam hill region of Eastern Ghats.

2. Wildlife and Protected Area Network

137. The district having a significance in wildlife because some portion of Sri Venkateswara National Park, Sri Venkateswara WLS included with Seshachalam Biosphere reserve is covering in the district, remaining portions are covering in Kadapa district. The Seshachalam hill range is endowed with rich variety of flora and fauna and the reserve is attached with religious and socio-cultural significance due to the presence of Tirumala Hills. Seshachalam Biosphere Reserve is located beyond 20 km from the project site. There is no protected area are observed within the study area (10.0 km radius).

3. Terrestrial Ecology

138. The study area is having habitat features such as Agriculture, opens lands, undulating hillocks and also marked by the presence of water bodies like Swarnamukhi River. The Eastern Ghats Mountains having Southern Dry- deciduous vegetation are at the distance of 20km from the core area. Major flora common to the area includes:

(i) **Trees:** The most common tree species occurring are *Borassus flabellifer* (Thadi chettu), *Ficus benghalensis* (Marri), *Azadirachta indica* (Vepa) are distributed all along the site. Plantation such as *Acacia auriculiformis*

(Australia tumma), *Eucalyptus globulus* (Neelagiri thylam), *Mangifera indica* (Mamidi) and Syzygium cumini.

(ii) **Shrubs:** The most common shrubs are *Dodonaea viscosa* (Bandaaru), *Senna auriculata* (Tangedu) and herbaceous flora dominated with seasonal grass species

(iii) **Herbs:** The most common herbs are *Tribulus terrestries*, *Tridax procumbens*, *Cassia occidentalis*, *Crotan bonplantianum*, *Datura metel*, *Eclipta alba*, *Boerhavia diffusa*, *Tephrocia purpuria*, *Achyranthes aspera* and *Abutilon indicum.*

(iv) **Climbers:** The commonly seen climbers are *Abrus precatorius*, *Hemidesmus indicus*, *Clitoria ternatea*, *Cuscuta reflexa*, *Pergularia daemia*, *Mucuna pruriens* and *Tinospora cordifolia*.

(v) **Grasses:** The common grass species are *Cymbopogon citratus*, *Saccharum spontaneum*, *Eragrostis tenella*, *Digitaria ciliaris*, *Cynodon dactylon* and *Chloris barbata*

(vi) **Cropping Pattern in the buffer area**: The cropping pattern of the area in Kharif is Groundnut, Redgram, Paddy, Sugarcane, Sunflower, Bajra and Ragi. In Rabi season crops like Paddy, Groundnut, Ragi, Maize & Sunflower are cultivated.

139. The Fauna of the study area includes:

(i) **Mammals:** The species like Indian Wild Boar (*Sus scrofa cristatus*), Black-naped hare (*Lepus nigricollis*), Common Indian Mongoose (*Herpestes javanicus*), Bonnet Monkey (*Macaca radiata*) are the common species.

(ii) **Birds:** The common bird species of the area include Rose ringed parakeet (*Psittacula krameri*), Ashy prinia (*Prinia socialis*), Spotted Dove (*Streptopelia chinensis*), Red vented bulbul (*Pycnonotus cafer*), Black drongo (*Dicrurus macrocercus*) and Small green bee-eater (*Merops orientalis*).

(iii) **Herpetofauna:** The herpetofauna includes Common tree frog, Fan throated lizard, Common Garden lizard, Common Indian cobra and Indian rat snake.

(iv) **Invertebrates:** Common castor, Peacock Pansy, Danaid egg fly are common to the area.

140. Except reserve forests of Fairly dense jungle to Dense scrub at Anjuru R.F and Open scrub with cactus at Udipudi R.F, Venubaka R.F, Permidi R.F and Cashew/Eucalyptus plantation there are no wildlife sanctuaries or biosphere reserves or nesting or breeding grounds for any of the rare species or other protected areas within the study area.

141. **Flora:** Among the 289 plant species reported two species namely Pterocarpus santalinus and Decalepis hamiltonii were reported near Anjur R.F were listed in the IUCN threatened category list. Still the RFs are far away from the project area and no direct impact on the particular species is noticed.

142. **Fauna:** Among the 93 fauna species reported one species namely Indian peafowl (IWPA Schedule-I), Wilddog* (IWPA Schedule-I), Sambar deer* (IWPA Schedule-III) is common sighted nearby forest tracks in the buffer area. Indian peafowl is commonly sighted during dawn and dusk period adjacent to the forest tracks. As these RFs are away from the project area, no direct impact on the species is noticed.

(* The threatened species were reported by the Addl. Principal. Chief Conservator of Forest field visit note from nearby Ramapuram Reserve Forest which is 12.5 km radius from the project boundary.Rc.No.655/2018/M8, Dt.27.08.2018).

Table 17a: Floral species in areas proximity to the proposed project area

S. No	Scientific name of the plant	Local name	Family	IUCN Red book category
1	*Ziziphus oenoplia*	Parimi	Rhamnaceae	Not assessed
2	*Desmodium gangeticum*	Kolapanna	Fabaceae	Not assessed
3	*Wrightia tinctoria*	Akupala	Asclepiadaceae	Least Concern
4	*Atalantia monophylla*	Adavi Nimma	Rutaceae	Not assessed
5	*Carissa spinarum*	Vaaka	Apocyanaceae	Not assessed
6	*Borassus flabellifer*	Taati	Palmae	Not assessed
7	*Aganosma caryophyllata*	Mogari	Apocyanaceae	Not assessed
8	*Cassia siamea*	Seema tangedu	Caesalpinaceae	Not assessed
9	*Artemisia vulgaris*	Machapatri	Asteraceae	Not assessed
10	*Phoenix sylvestris*	Eeta	Palmae	Not assessed
11	*Sapindus emarginatus*	Kunkudu	Sapindaceae	Not assessed
12	*Aegle marmelos*	Maredu	Rutaceae	Not assessed
13	*Syzygium cumini*	Neredu	Myrtaceae	Not assessed
14	*Cassia auriculata*	Tangedu	Caesalpinaceae	Not assessed
15	*Ficus benghalensis*	Marri	Moraceae	Not assessed
16	*Mangifera indica*	Mamidi	Anacardiaceae	Data Deficient
17	*Pongamia Pinnata*	Ganuga	Fabaceae	Least Concern
18	*Eucolyptus tereticornis*	Neelagiri	Myrtaceae	Not assessed
19	*Alstonia scholaris*	Edakulapala	Apocyanaceae	Least concern
20	*Delonix regia*	Turaayi	Caesalpinaceae	Least concern
21	*Jatropha curcas`*	Jatropa	Euphorbiaceae	Not assessed
22	*Murraya koenigii*	Karivepa	Rutaceae	Not assessed
23	*Cactus strictus*	Nagajemudu	Cactaceae	Data deficient
24	*Cassia occidentalis*	Kasintha	Caesalpinaceae	Not assessed
25	*Lantana camara*	Makkadambu	Verbenaceae	Not assessed
26	*Aristida adscensionis*	Grass	Poaceae	Not assessed
27	*Eichhornia crassipes*	Gurrapu dekka	Pontederiaceae	Not assessed
28	*Pistia stratiotes*	Budaga tamara	Araceae	Not assessed
29	*Ipomoea aquatic*	Thooti koora	Convolvulaceae	Least concern
39	*Nelumbo nucifera*	Kamalam	Nelumbonaceae	Not assessed

Table 17b: List of faunal species as per secondary data and primary study

Scientific Name of the animal	Local name	Family	Belongs to which schedule as per Wildlife act	Classification as per IUCN Redbook
Mammals				
Axis axis	Spotted deer	Cervidae	III	Least concern
Sus scrofa	Wild Boar	Suidae	III	Least concern
Lepus nigricollis	Hare	Leporidae	IV	Least concern
Bos gaurus	Indian Bison	Bovidae	I	Vulnerable
Cervus unicolour	Sambar	Cervidae	III	Vulnerable
Melursus ursinus	Bear	Ursidae	II	Vulnerable
Canis aureus	Jackal	Canidae	I	Least concern
Macaca mulatta	Monkey	Cercopithecidae	I	Least concern
Herpestes auropunctatus	Mongoose	Herpestidae	IV	Not assessed
Hystrix indica	Indian porcupine	Hystricidae	III	Least concern
Cuon alpines	Wild dog	Canidae	II	Endangered
Canis lupus pallipes	Wolf	Canidae	I	Not assessed

Muntiacus muntjak	Indian barking deer	Cervidae	III	Least concern
Vulpes benghalensis	Fox	Canidae	II	Least concern
Reptiles				
Varanus bengalensis	Monitor lizard	Varanidae	I	Least concern
Ptyas mucosus	Rat snake	Colubridae	II	Not assessed
Calotes versicolor	Garden lizard	Agamidae	-	Not assessed
Birds				
Phalacrocorax niger	Little cormorant	Phalacrocoracidae	IV	Least concern
Pavo cristatus	Peacock	Phasianidae	I	Least concern
Ardea cinerea	Grey heron	Ardeidae	--	Least concern
Bubulcus ibis	Cattle egret	Ardeidae	IV	Least concern
Egretta garzetta	Little egret	Ardeidae	IV	Least concern
Coracias benghalensis	Paala pitta	Coraciidae	IV	Least concern
Alcedo atthis	Kingfisher	Alcedinidae	IV	Least concern
Hierococcyx varius	Common hawk	Cuculidae	--	Least concern
Eudynamys scolopaceus	Indian koel	Cuculidae	--	Least concern
Psittacula krameri	Parrot	Psittaculidae		Least concern
Ottus bakkamoena	Owl	Strigidae	IV	Least concern
Columba livia	Indian rock pegion	Columbidae	IV	Least concern
Spilopelia chinensis	Spotted dove	Columbidae	IV	Least concern
Amaurornis phoenicurus	Water hen	Rallidae	--	Least concern
Lanius schach	Longtailed shrike	Laniidae	--	Least concern
Pericrocotus cinnamomeus	Small minivet	Campephagidae	IV	Least concern
Dicrurus macrocercus	Drongo	Dicruridae	IV	Least concern
Tephrodornis pondicerianus	Commonwoodshrike	Tephrodornithidae	--	Not assessed

4. Environmental Sensitivity

143. Based on the assessment carried out the following are observed in the study area (within 10.0 km as prescribed in the MoEFCC EIA Guidance manual for Industrial Estates).

(i) No National Parks, Wildlife Sanctuaries
(ii) No critically Polluted Areas
(iii) No Interstate Boundaries
(iv) No other Notified ESAs

144. A preliminary environmental/ecological sensitivity assessment of the project site has been carried out based on available secondary data (Survey of India top sheets and Protected area Networks in India PA's). The environmental/ecological sensitive areas covering an aerial distance of 10 km from project boundary is given below.

Table 18c: Environmental Sensitivity

S. No.	Areas	Yes/No	Name/Identity Aerial distance Proposed project boundary and near by
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Yes	• Sri Perumallaswamy Temple, Thondamanadu – 12.1 km-SW • Megalithic Burials Complex, Utchuru-12.6 km-E •
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains,	Yes	• Anjur R.F- 3.2 km –S • Ugumudi R.F-6.3 km-ESE • Udupudi R.F– 7.5 Km –NE • Venumbaka R.F– 9.4 km –NE

S. No.	Areas	Yes/No	Name/Identity Aerial distance Proposed project boundary and near by
	forests		• Perimidi R.F– 9.6 km –N • Ramapuram R.F-10.0 km –S • Kasaram R.F– 11.1 km – NNW • Rosanuru P.F – 12.3 km-NE • Mangalampadu R.F–13.6km-ESE • Ekollu R.F– 13.8 km –NE • Kalavalapudi R.F– 14.0 km-NNW • Sangavaram R.F – 15.0 N
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration		
4	Inland, coastal, marine or underground waters	Yes	• Swarnamukhi River – 6.0 km- N • Kalangi River – 0.72km -ESE • Gundlamadugu – 2.7km –S • Teluguganga Canal – 2.3km-W
5	State, National boundaries	No	-
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Yes	• NH - 71 N – 3 km • NH-16 (AH 45) – 15.0 km E • Southern Railway Line – 16.2 km -E • SCR Line – 9.2 km -W
7	Defence installations	No	-
8	Densely populated or built-up area	Yes	• Srikalahasti – 6.8 km -W
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	• Srikalahasteeswara swamy temple– 7.6 km – W • Sri Perumallaswamy Temple, Thondamanadu – 12.1 km-SW
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Yes	• Srikalahasteeswara swamy temple– 7.6km – W
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	No	--
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No	Proposed development area falls under Seismic Zone-III (Moderate Intensity Zone) as per IS 1893 (Part I). During the design stage, the effects from natural disasters will be considered as per IS: 1893 (Part-1):2002 and necessary precautionary measures would be built-in /implemented.

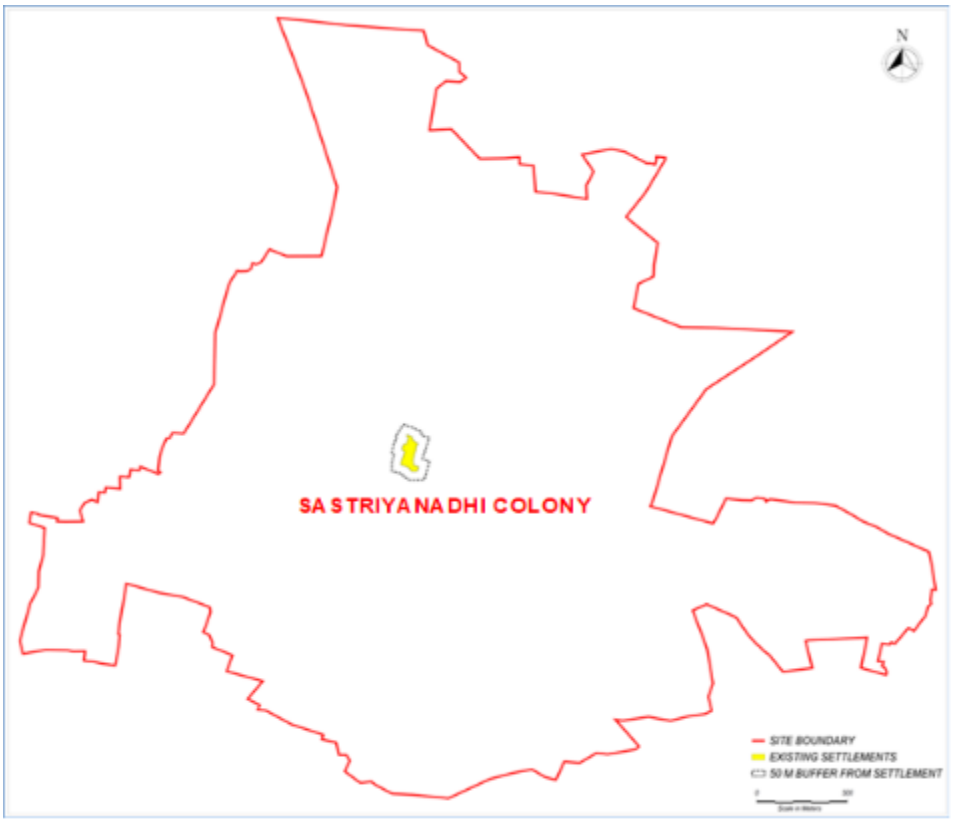
C. Socio Economic Survey

145. The purpose of the baseline socioeconomic survey of displaced persons is to establish monitoring and evaluation parameters. It will be used as a benchmark for monitoring the socio-economic status of displaced persons. The survey shall cover all impacted displaced persons and the survey shall also collect gender-disaggregated data to address gender issues in resettlement. The socio-economic survey carried out using a structured questionnaire, that would capture details of standard of living, inventory of assets, sources of income, level of indebtedness, profile of household members, health and sanitation, access to services and facilities, perceived benefits and impacts of the project and resettlement preferences of all major impacted households likely to be displaced. This

information along with the census survey data would facilitate the preparation of a resettlement plan to mitigate adverse impact.

146. **Habitations within the start up area.** The industrial cluster predominantly is barren or agricultural land and away from communities and the start-up area development is not expected to have significant impacts on them during the construction or operation phases of the subproject. There is one habitation - Sastri yanadhi Colony settlement (in Routhsurmala village) inhabited by 65 scheduled tribe households), which is located within the subproject area (Figure 23) which has been retained to avoid physical displacement in the subproject. It has been proposed to provide a 50 m buffer area around the settlement that would have green cover and the zoning of the industrial cluster by APIIC has considered the presence of the habitation and accordingly has proposed only non-polluting green industries around the settlement area.

Figure 23: Location of Habitation and 50 m buffer



1. Demographic Profile of Project Affected Households

a. Persons in Project Villages by Gender

147. Affected families covered during the survey constitute of 1339 persons. Of these, females account for 48.62 percent and males account for 51.38 percent. About 2.97 percent (13 families) of affected families are headed by women.

b. Household by Religion

148. Majority (98.4%) of the affected families are Hindus, and the remaining being Muslims and Christians.

c. Household by Social Group

149. Among the project impacted families schedule caste are 48%, other backward classes constitute of more than 24%, schedule tribe constitute of 17%. General category is 10.5%.

d. Household by Family Size

150. Families with a size of up to 2 members account for 36 percent, followed by 47 percent of families having 3 to 4 members, and 16 percent families having 4 or more members. The average size of the affected family is 3.06

e. Age Aspects

151. About 33 percent of the affected persons are in the age group of 21 years and below, followed by 17.85 percent in the age group of 21 and 35 years, 26.81 percent in the 35 and 50 years, 13.29 percent in the age group of 50 and 60 years and about 9 percent of affected persons are above 60 years of age

2. Educational Level and Occupation of Project Affected Persons

152. About 22 percent amongst males and 27 percent amongst females, and overall about 24 percent of the affected population is illiterate. A little over one third of affected persons have attained up to primary level education while about 21.6 percent have attained up to upper primary level education. High school and higher level of education is observed to be low among affected population. Amongst the affected population, about 39.4 percent are reported to be working as agricultural labour. Another 4.18 percent of affected persons work as casual labour as their primary occupation. About 38.24 percent (corresponding figures for males and females is 33.28 percent and 43.47 percent respectively) are not in workforce that primarily comprises of children, elders and housewives. The unemployed account for 2.32 percent and the rest are into various other activities.

3. Income of Household

153. About one fourth of affected families have reported annual household income in the ₹10,001-25,000 range while about 42 percent have reported their annual income between ₹25,001 and ₹50,000 per annum. Another 16 percent have reported their earning between ₹50,001 while about 6.41 percent have mentioned their annual household income to be above ₹100,000. During the survey, 420 (96.11 percent) out of 437 families reported to be 'white ration card' holder (all BPL families are eligible for this food security benefit by government). Average annual income of the affected families has been calculated to be ₹36,149.

4. Indebtedness of Household

154. Nearly 74 percent of the affected families are indebted and have either taken a loan from the bank or from the money lender or from both the bank and the money lender. Most prominent reasons for loan have been reported as agriculture (by 57 percent)

5. Impact on Vulnerable Households[12]

155. All affected families have been found to be vulnerable on one or more vulnerability aspect. Poor economic status is the predominant vulnerability amongst the affected families with nearly 96 percent of them being under below poverty line (BPL). Amongst the surveyed families 48 percent are scheduled caste, followed by 17 percent scheduled tribe families, 3 percent women headed families and 0.68 percent that are headed by elderly.

6. Assets Owned

156. Information indicative of the standard of living of affected families in terms of physical assets possessed was gathered during the survey. The survey findings are given in the following Table.

Table 19: Assets Owned

Indicators	Number	Percentage
TV	222	50.80
Fridge	51	11.67
Washing machine	14	3.20
Cycle	126	28.83
Motorcycle	108	24.71
Car	7	1.60
Telephone	14	3.20
Mobile Phone	290	66.36
Total	**437**	**100**

7. Health Seeking Behaviour of PAH

[12] Refers to Women Headed Households (WHH), elderly headed households, children (orphans and/or working children, if any) households with physical/mentally disabled members, Antyodaya Anna Yojana (AAY) and Annapurna Scheme (AP) card holder households (i.e.) who come under BPL households, scheduled caste households, scheduled tribe households, landless households and those without legal title.

a. Childbirth Place in influenced Area

157. About 39 percent of the affected families reported that the delivery of the last child took place in a government hospital and 5 percent reported that the delivery of the child took place in a private hospital, together accounting for 44 percent institutional delivery, which is very low compared to State (Rural Andhra Pradesh 89.7%) and National (Rural India 75.1%) average. Nearly 46 percent reported that the last delivery happened at home with the help of the village elder and 2 percent reported that the midwife assisted in the delivery.

b. Illness of the Affected Area

158. The affected families were asked about from whom they seek healthcare support in times of illness. Eighty-five percent of the affected families reported that they seek healthcare support both from government primary health centres and private clinics/doctors. Twelve percent reported that they go only to government primary health centres.

8. Economic Indicators of Project Affected Households (PAH)

a. Type of House Wall

159. Among the affected families 89.39% of the total affected households have brick wall houses. Thatched/wooden/Tin houses accounts to be 2.26% and Muddy wall houses are 8.35%. Table 20 shows the type of house wall of the affected families. Most of the affected families are having pacca house and with all household common amenities.

Table 20: Types of House Wall

Villages/ Housing	Thatched / Wooden /Tin	Mud	Brick	Total
Sastriyanadhi Colony	1	1	24	**26**
Routhsurmala	6	17	133	**156**
Gowdamala	0	0	39	**39**
Kothapalem	6	13	202	**221**
Alathuru	0	16	108	**124**
B.S. Puram	0	1	8	**9**
Total	**13**	**48**	**514**	**575**
%	**2.26**	**8.35**	**89.39**	**100**

b. House Possession

160. Among the affected families 89.39% have own houses and 10.61% have rented houses. Table 21 shows the house possession among the affected families.

Table 21: House Possession

Villages/ Housing	Owned	Rented	Total
Sastriyanadhi Colony	26	0	**26**
Routhsurmala	126	30	**156**
Gowdamala	38	1	**39**
Kothapalem	200	21	**221**
Alathuru	117	7	**124**
B.S. Puram	7	2	**9**
Total	**514**	**61**	**575**
%	**89.39**	**10.61**	**100**

c. Separate Kitchen

161. The facilities such as separate kitchen among the affected families are with 44.17% of the families but rather 55.83% of the families cook in their household area or outside without appropriate kitchen and facilities in it. The proposed project area is very much need of common amenities and separate kitchen-built houses. Table below shows the number of affected households' separate kitchen among the affected families.

Table 22: Separate Kitchen

Villages	Yes	No	Total
Sastriyanadhi Colony	0	26	**26**
Routhsurmala	58	98	**156**
Gowdamala	3	36	**39**
Kothapalem	111	110	**221**
Alathuru	77	47	**124**
B.S. Puram	5	4	**9**
Total	**254**	**321**	**575**
%	**44.17**	**55.83**	**100**

d. Separate Latrine Facility

162. Among the affected families 88% have separate latrine or toilet facility, while 12% don't have a separate latrine or toilet facility. As per census survey, we could see that 12% of PAF are not having separate toilets/latrine facilities and there might be more than this in the villages; the proponent may suggest appropriate authorities to construct toilets under Swatch Bharat scheme or under CSR along with bring awareness among the people to use toilets/latrines. Table below shows the separate latrine or toilet facility among the affected households.

Table 23: Separate Latrine Facility

Villages	Yes	No	Total
Sastriyanadhi Colony	22	4	**26**
Routhsurmala	133	23	**156**
Gowdamala	35	4	**39**
Kothapalem	203	18	**221**
Alathuru	105	19	**124**
B.S. Puram	8	1	**9**
Total	**506**	**69**	**575**
%	**88**	**12**	**100**

e. House Electrified

163. Among the affected families 85.91% houses are electrified, while 14.09% houses have no electricity. During the Sastriyanadhi Colony consultations they revealed that the house is electrified, and it is free from government. Below table 24 shows the household electrified among the affected household.

Table 24: Household Electrified

Villages	Yes	No	Total
Sastriyanadhi Colony	25	1	**26**
Routhsurmala	148	8	**156**
Gowdamala	6	33	**39**
Kothapalem	197	24	**221**
Alathuru	110	14	**124**
B.S. Puram	8	1	**9**
Total Households	**494**	**81**	**575**
%	**85.91**	**14.09**	**100**

f. Water Supply

164. Among the affected families 96% of them use Public Tap/ Hand Pump. Most of the villages have a common area such as water and near to the residents. Table 25 shows the water supply among the affected household.

Table 25: Water Supply

Villages	HSC	Public Tap/ Hand Pump	Own Bore/ Open well	Common Well	HSC & Public Tap/ Hand Pump	Total
Sastriyanadhi Colony	1	22	0	3	0	**26**
Routhsurmala	14	141	0	0	1	**156**
Gowdamala	0	39	0	0	0	**39**
Kothapalem	1	218	1	0	1	**221**
Alathuru	1	123	0	0	0	**124**
B.S. Puram	0	9	0	0	0	**9**
Total Households	**17**	**552**	**1**	**3**	**2**	**575**
%	**2.96**	**96**	**0.17**	**0.52**	**0.35**	**100**

g. Fuel for Cooking

165. Among the affected household 74.96% have LPG Gas and only 23.48% cook on firewood. Gober gas and Kerosene constitutes to be 1.39% each. Table 26 shows the fuels used for cooking.

Table 26: Fuel for Cooking

Villages	LPG Gas	Gober Gas	Kerosene	Firewood	Unanswered	Total
Sastriyanadhi Colony	0	0	0	26	0	**26**
Routhsurmala	115	0	2	38	1	**156**
Gowdamala	32	1	0	6	0	**39**
Kothapalem	189	3	1	28	0	**221**
Alathuru	88	1	0	35	0	**124**
B.S. Puram	7	0	0	2	0	**9**
Total Households	**431**	**5**	**3**	**135**	**1**	**575**
%	**74.96**	**0.87**	**0.52**	**23.48**	**0.17**	**100**

h. Financial Decision

166. Among the affected families 30% of the women have been involving in the financial decisions in the family and around 70% of the women are not involving in the financial decision. Table 27 shows the financial decision capacity of women in the family.

Table 27: Financial Decision

Villages	Yes	No	Total
Sastriyanadhi Colony	16	10	**26**
Routhsurmala	54	102	**156**
Gowdamala	11	28	**39**
Kothapalem	63	158	**221**
Alathuru	25	99	**124**
B.S. Puram	3	6	**9**
Total Households	**172**	**403**	**575**
Total Percentage	**29.91**	**70.09**	**100**

i. Water Fetching

167. The fetching of water in the affected households is being completed by Lady of the House which constitutes to be 90.78%. Table 28 represents the water fetching activity among the project affected households.

Table 28: Water Fetching Activity

Villages	Lady of the House	Girl Child	Other Specify	Lady of the House/ Others	Unanswered	Total
Sastriyanadhi Colony	24	0	1	1	0	**26**

Routhsurmala	136	5	14	1	0	**156**
Gowdamala	37	0	2	0	0	**39**
Kothapalem	205	7	8	0	1	**221**
Alathuru	111	2	7	0	4	**124**
B.S. Puram	9	0	0	0	0	**9**
Total Households	**522**	**14**	**32**	**2**	**5**	**575**
Total Percentage	**90.78**	**2.43**	**5.57**	**0.35**	**0.87**	**100**

j. Skill Development Training for Women

168. Among the affected households' women were asked about the skill development training. Out of the total 79.13% agreed for the training. Table 29 shows the women agreed and disagreed for skill development training.

Table 29: Skill Development for Women

Villages	Yes	No	Unanswered	Total
Sastriyanadhi Colony	9	15	2	**26**
Routhsurmala	107	46	3	**156**
Gowdamala	34	5	0	**39**
Kothapalem	186	32	3	**221**
Alathuru	110	14	0	**124**
B.S. Puram	9	0	0	**9**
Total Households	**455**	**112**	**8**	**575**
Total Percentage	**79.13**	**19.48**	**1.39**	**100**

k. Women Willingness for Income Generation Activity

169. Among the affected households' women who wish to be economic independent are 78.63% and 19.87% are not interested in being an earning member of the family. Table 30 shows the willingness of women in future income generation.

Table 30: Women Willingness for Income Generation Activity

Villages	Yes	No	Unanswered	Total
Sastriyanadhi Colony	9	16	1	**26**
Routhsurmala	107	46	3	**156**
Gowdamala	34	5	0	**39**
Kothapalem	185	33	3	**221**
Alathuru	110	14	0	**124**
B.S. Puram	9	0	0	**9**
Total Households	**454**	**114**	**7**	**575**

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

170. Industrial Infrastructure improvement projects are likely to bring changes in the local environment both beneficial and adverse. This section of IEE identifies nature, extent, and magnitude of likely changes vis-a-vis project activities for all stage of project cycle i.e., preconstruction, construction, and operation. Beneficial impacts are mostly long-term and permanent whereas adverse impacts are localized and temporary in nature and are likely to occur mostly during construction stage.

171. The potential impacts on the environment from the development of subproject have been identified considering the nature and extent of the activities associated with the project implementation and operation.

172. In this section, likely impacts of these activities on environmental attributes have been identified, assessed and presented. In order to mitigate likely environmental impacts during construction and operation phases due to proposed development suitable mitigation measures are framed and incorporated as a part of planning process. The impacts have been assessed qualitatively for various environmental components and impact specific mitigation measures are proposed.

A. Pre-Construction Phase Impacts and Mitigation Measures

173. **Design of the Proposed Components.**). Technical design of all the elements of water supply (WTP, reservoirs, and distribution system etc.), roads and drains, and power distribution, etc., follows the relevant national planning and design guidelines such as Central Public Health and Environmental Engineering Organization (CPHEEO) manuals, Indian Road Congress (IRC) standards, and applicable power distribution system planning, security and operating standards.

174. **Land acquisition and involuntary resettlement impacts.** The subproject will involve acquisition of private land and resumption of assigned land for the proposed infrastructure improvements. The project start-up area of 2627.65 acres will involve acquisition of 161.03 acres (65.17 hectares) of private land and resumption of 1494.70 acres (604.9 hectares) of assigned land. Further, the subproject involves 971.92 acres (393.33 hectares) of government This subproject involves involuntary resettlement impacts to 874 families, all of whom will be significantly impacted. The impacts related to involuntary resettlement and indigenous people are assessed through parallel process of resettlement planning, and the impacts and avoidance, mitigation / compensatory measures are presented in the Resettlement and Indigenous People Plan (RIPP) of this subproject.

Summary of Involuntary Settlement

Impact	Extent in acres (in hectare)/ Numbers
Asset Loss	
Affected Land	2627.65 acres (1063.39 ha)
Private land acquisition	161.03 acres (65.17 ha)
Resumption of assigned land	1494.70 acres (604.9 ha)
Transfer of government land *(includes 399.*31 *acres*/161.6 hectares *of land identified as village site, road and cart track, stream, canal which will be maintained without change in status)*	971.92 acres (393.33 ha)
Other Private Assets (compound wall, hand pump, borewell, open well, shed/storeroom etc; detailed break-up provided in chapter II)	117
Loss of Trees	116832

(preliminary estimate, includes mature trees and saplings)	
Total Affected families	874
Affected families facing relocation impact (loss of residence)	Nil
Affected families facing loss of commercial assets/business	Nil
Titleholders facing significant loss of land (productive asset)	32
Assigned landowners facing significant loss of land (productive asset)	842
Affected families facing economic displacement (attributable to loss of business)	nil
Tenants and other non-titleholders	Nil
Total affected family members	2699
Affected family members (Titleholder families)	115
Non-titled affected family members (Assigned landowner families)	2584
Significantly affected families	874
Total Vulnerable Families**	874 (100%)
Families with a Disabled member	4 (0.45%)
Scheduled Tribe families	138 (15.79%)
Scheduled Caste families	422 (48.28%)
Families Headed by Elderly	6 (0.68%)
Below Poverty Line (BPL) families	840 (96.1%)
Women headed families	26 (2.97%)

Source: Land Acquisition records and Socio-Economic Survey, September 2018, updated May 2022.
** loss of tree estimate is preliminary in nature, based on survey carried out earlier. Final figures will be included in the updated plan*
***Figures are based on socio-economic survey data and presented against entire affected population. Vulnerable families may have multiple vulnerabilities. Categories of vulnerability presented above are not mutually exclusive*

175. All licenses or permits required for the proposed subproject will be obtained prior to their construction in accordance to the existing GoAP and GoI laws. Depending on the design, required licenses may include: environmental clearance, consents under air and water act hazardous waste management requirement, and permits for water and power, building permits etc.

176. Project areas are not known to be archeologically or historically sensitive, the risk of uncovering archaeological remains during the excavations is very low. Nevertheless, accidental discovery of cultural property sites, if any, will be managed according to government guidelines. If archaeological or cultural artifacts are discovered on the campuses during construction, the finds will be handled by the contractor in accordance with government standards and procedures set forth concerning cultural conservation. Following measures will be implemented:

(i) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work
(ii) Stop work immediately to allow further investigation if any finds are suspected; and
(iii) Inform local Archaeological Department office if a find is suspected and take any action, they require to ensure its removal or protection in situ.

177. Soil erosion from pre-construction activities will be mitigated prior to construction as needed. Clearance of vegetation and land preparation (digging, excavations) will take place. The contractors will take precautions to avoid soil erosion due to water runoff during construction, good practice measures will be followed as appropriate for each building site. Common good practices shall include (i) Clearing sites as close as possible to construction start date (ii) Re-vegetating exposed areas as soon as possible following the completion of construction works in that area; (iii) In the event there is steep slope as specific site land

compaction should be conducted on that slope after land clearing (iv) managing drain run-off water will conform to good practices for reducing soil erosion.

178. **Site selection of construction work camps, stockpile areas, storage areas, and disposal areas**. Project site is mostly comprises of barren and agricultural lands, and it is most certain that construction camps will be set up within the project area. Residential areas will not be considered for setting up construction camps to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust and noise and to prevent social conflicts, shortages of amenities and crime). No construction facility or camp site shall be located within 1 km of sastri yanadi Colony situated within the start up area.

B. Construction Phase Impacts and Mitigation Measures:

179. The subproject site is predominantly barren wasteland with few areas of scrub and partly agricultural/commercial plantations coconut, eucalyptus, mango, bamboo etc.,. Clearance of vegetation shall be carried out as per project requirements. There is Sasthri yanadhi settlement falling within the proposed area and buffer area of a minimum 50 m shall be maintained and no construction works are planned in the vicinity of these locations.

180. **Impact due to site development:** Activities like clearing of vegetation, waste/debris disposal, and establishment of temporary labour camps may change the topography and appearance of the landscape. The following mitigation measures will be adopted:

(i) During the site levelling, excess soil or cut materials should be used for road construction or widening or properly disposed in an environmentally acceptable manner.
(ii) Cut slopes should be re-vegetated immediately after widening activities.
(iii) Borrow areas, if required should be rehabilitated and brought back as far as possible to their previous appearance.
(iv) Cut off material should be used to widen the road or disposed of at proper disposal sites.
(v) Provision and allocation of proper waste disposal bins and sites are required; and
(vi) Supply of cooking gas should be provided by the contractor to eliminate the use of firewood.

181. **Impact on Air Quality:** The proposed subproject will require construction during the development phase. Air quality in the immediate vicinity is likely to be marginally affected due to movement of vehicles and heavy earth movement works that will be undertaken as part of subproject works. In most instances the primary concern during construction phase are emissions of dust and particulate matter that arise from the movement and storage of materials and other construction activities. The emissions from vehicles and construction machinery are also considered. It is most certain that work will be conducted during the dry season, so there is potential for creating dust from the excavation of dry soil, backfilling, and transportation to disposal. Emissions from construction vehicles, equipment, and machinery used for excavation and construction will also induce impacts on the air quality in the construction sites. Anticipated impacts include dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, Sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons) but temporary and during construction activities only. For all developments, best practicable means should be adopted to control and reduce emissions. Some examples that may be used are as follows:

(i) Use of enclosures – use of screens and sheeting to contain dust;

(ii) Use of paved / surfaced and cleaned haul routes and hard-standings;
(iii) No burning of waste or wood or logs on site.
(iv) Plan the work sites properly, and demarcate the sites for stockpiling of, soils, gravel, and other construction materials away from the traffic, vehicle, general worker movement to avoid disturbance of loose materials;
(v) Use tarpaulins to cover sand and other loose material when transported by trucks;
(vi) Clean wheels and undercarriage of haul trucks prior to leaving construction site;
(vii) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly; contractor's vehicles and equipment should compulsorily have pollution under control (PUC) certificate and submit to PIU before deployment at site
(viii) Obtain consent to establish (CTE) and consent to operate (CTO) for batching plant, hot mix plant, crushers and DG set etc. if specifically established for this project;
(ix) If contractor procures any material (such as ready mix concrete, asphalt/macadam, aggregates etc.), from third party agencies, contractor shall ensure that such agencies have all necessary clearances/permissions as required under the law; these include CTE/CTO from APPCB, environmental clearance, etc.; contractor shall collect the copy of these certificates and submit to PIU; PIU will approve the source only after all the certificates are submitted; and
(x) Conduct air quality monitoring according to the EMP.

182. I**mpact on Water Resources:** The subproject will not use groundwater for construction purposes. Hence there are no impacts related with water abstraction anticipated from the subproject. Subproject does not involve development of water source. Subproject will meet the water demand from a bulk water supply subproject being implemented under Project 1 of VCICDP, which in turn sources water from a major reservoir in the state – Kandaleru reservoir. APIIC is currently implementing this water subproject for "providing water supply to industrial clusters in southern region of Andhra Pradesh - package VCICDP/APIIC/05) to have a reliable continuous supply of surface water for the industries. Chittore south industrial cluster is one of the industrial clusters to be benefited from this subproject. Construction work is likely to be completed in June 2023. Water for Chittoor south start up area will be provided from a ground level balancing reservoir (GLBR) of 1600 KL capacity proposed in the start-up area. Due diligence of this water supply subproject was carried out, and an IEE report[13] was prepared by APIIC and cleared and disclosed by ADB.

183. During the construction phase, water will be used for various construction activities. To fulfil the water requirement, water will be supplied from the nearest surface water source or from the water reserves in the area. Suitable arrangement for drinking water in the campsite will be managed by contractor without affecting availability to local community. During the construction works, run-off from stockpiled materials and chemical contamination from fuels and lubricants can contaminate downstream surface water quality of the streams. These potential impacts are temporary and short-term duration only. However, to ensure that these are mitigated, construction contractor will be required to:

Mitigation Measures

[13] https://www.adb.org/projects/documents/ind-48434-003-iee-14

(i) Preventing the run-off water beyond the Industrial cluster premises so that it will recharge the ground water in the same area; and Storm water drainage system should be provided inside the project area.
(ii) Ground water extraction for construction activities will not be done and water or surface water wastage should be avoided.
(iii) Construction works near waterways/water bodies shall not be undertaken during the monsoon season.
(iv) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies.
(v) No construction camp within 500 m of any water body.
(vi) Locate all parking, repair, and fuel and hazardous material storage area away from any water body. Vehicle parking and maintenance areas shall have waterproof floors from which drainage is collected and treated to legal standards.
(vii) Refuel vehicles only in dedicated areas with waterproof floors from which drainage flows to an oil/water separator before discharge.
(viii) Collect all waste oil, store in sealed damage-proof containers and dispose it to recyclers.
(ix) All equipment operators, drivers, and warehouse personnel will be trained in immediate response for spill containment and eventual clean up.
(x) Temporary retention ponds, interception drains, and silt traps are installed to prevent silt laden water from entering adjacent water bodies/waterways; and
(xi) The slopes of embankments leading to water bodies should be modified and re-channelized to prevent entry of contaminants.

184. **Impact on Noise Levels:** Sources of noise pollution during the construction of the subproject is from machinery comprising of mainly bull dozers, front end loaders, standby generators, fabrication workshop and other heavy earth machinery used in construction in addition to the vehicular movement within the project boundary. There are no notable noise sources in the project area that comprise mainly of barren and agricultural lands and existing noise in the project area is within the permissible limits. During the construction period, noise will be generated from the operation of heavy machinery, the haulage of construction materials to the construction yard and the general activities at the yard itself. Excavation, concrete mixing and material movements will be primary noise generating activities and, most likely, will be uniformly distributed over the entire construction period. These construction activities are expected to produce noise levels in the range of 80 – 95 dB(A). Noise and vibration from construction and operation phase will be unavoidable but the impact will only be temporary and minimal and will only impact locations close to the work sites. Regular maintenance of construction vehicles and machinery must also be undertaken to reduce noise.

Mitigation Measures

(i) Construction facilities should be located away from settlements; no facility should be located within 1 km of Shastri yanadi colony
(ii) Careful planning of machinery operation and the scheduling of such operations can reduce noise levels. The use of equipment emitting noise not greater than 90 dB (A) for eight-hour operations shift and, when possible, the siting of construction yards at least 500 metres from residential areas should be adhered to.
(iii) Contractors should be required to fit noise shields on construction machinery and to provide earplugs to the operators of heavy machines.
(iv) Further to minimize noise impacts near sensitive receptors (nearby community), operation of excavator and other heavy machineries will be carried out mostly during off-hours (7 am to 9 am and 3.30 pm to 7 pm) and

on holidays (Saturday and Sundays). Baseline noise will be established for all sensitive areas prior to construction and follow up noise monitoring will be carried out during the construction.

185. **Impact on the Existing Traffic System:** The proposed subproject will involve minimal and temporary increase in traffic for transportation of the construction material. Project area is mostly uninhabited, and works within the site unlikely to have any impacts on traffic or access. However, the movement of construction vehicles on existing roads, will add to the traffic. Increased movement of trucks and heavy vehicles may cause road safety issues. Following measures neds to be implemented:

- The contractor will submit a Traffic Management Plan to the Project Engineer at least two weeks before the construction starts. This Plan will recommend for approval of PIU, the safe and convenient construction traffic movement, schedules, and road safety measures and information dissemination;

- Contractor to implement TMP effectively

- Transportation of quarry and other construction material to the construction sites through heavy vehicles shall be done through existing major roads to the extent possible. This will restrict wear and tear to the interior village/minor roads. Small vehicles/un-motorized vehicle can also be used for its further transportation to the construction sites from temporary storage areas.

186. **Impact on Soil Quality:** Land disturbance from the proposed construction activities will be confined to the immediate work area. It is anticipated that major civil and mechanical works would be undertaken in setting up the Industrial cluster. Overall, the impact of this on the site environment will be temporary.

187. **Borrow Areas and Quarries:** Need for opening new borrows areas and quarries are not anticipated. However, if requirement emerged, it may cause some adverse impacts if left un-rehabilitated. It may pose risk to people, particularly children and animals of accidentally falling into it as well as become potential breeding ground for mosquitoes and vector born disease. Illegal quarrying may lead to unstable soil condition; destroy the landscape of the terrain, air and noise pollution. Quarry material will be mostly sourced from existing licensed quarries. If additional quarries will be required, contractor obtain all necessary permits and licenses, including environmental clearance, if required. Contractor will identify sources of water for construction purposes and obtain necessary permissions as required, and will obtain approval of APIIC before the use. Contractor is required to submit a borrow area management plan including the details on topsoil conservation, procedures for opening/closing and restoration of borrow area etc. The plan is required to be approved by the PIU. Following measures needs to be implemented:

(i) Borrow areas if required, shall not be located near forest areas. The edges of borrow sites shall be no closer than 3 m from any fence line or boundary.
(ii) Adequate clearance shall be provided for the construction of catch drains.
(iii) Borrow sites shall have adequate drainage outlets unless the relevant landowner has agreed that the borrow area is to create a permanent tank or dam. Cut batter slopes shall not be steeper than 3 to 1 and shall be left by the Contractor in a tidy and safe condition to the satisfaction of the Engineer. Written clearance from the landowner/village head shall be obtained before leaving a site.
(iv) Obtain statutory approval from competent authorities
(v) Borrow pits shall be selected from barren land/wasteland to the extent possible.

(vi) Borrow areas should not be located on cultivable lands except in the situations where landowners' desires to level the land. The topsoil shall be preserved, and depth shall be restricted to the desired level.
(vii) Borrow areas should be excavated as per the intended end use by the owner.
(viii) The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and amount that can be borrowed.
(ix) The dredged material from the riverbank shall be tested for presence of heavy metals and other pollutants before its reuse.
(x) The depths in borrow pits to be regulated so that the sides shall not be steeper than 25%, to the extent possible, borrow areas shall be sited away from habited areas. Borrow areas shall be levelled with salvaged material or other filling materials which do not pose contamination of soil.
(xi) Monitoring of rehabilitation plan of borrow areas.

188. **Impact on Ecology:** The proposed industrial area that is barren land and there are no rare or sensitive flora and fauna species in site or in the region. Agricultural land that is part of start up area includes agricultural plantations of eucalyptus, mango, acacia, neem, bamboo, coconut etc belonging to affected families. These trees are mix of mature, young trees and recently planted saplings. it is predicted that the impacts on existing flora and fauna will not be significant. Development of green belt around the subproject area would enhance the situation by planting local fast-growing species which are present in the surrounding areas.

(i) Minimize removal of trees by adopting to site condition, remove tree only where it is necessary
(ii) Obtain prior permission for tree cutting
(iii) Plant and maintain 2 trees for each tree that is removed.
(iv) Prior to removal of trees, conduct a confirmatory survey of trees for any birds and nests to confirm there are no protected species of birds; if any protected species are noticed, inform ADB, and update the IEE and EMP, and work should commence only after ADB clearance of IEE and EMP

189. **Impact on Historical Monuments / Religious Structures:** There are no adverse impacts expected on historical places/monuments.

190. **Landscape and Aesthetics:** The construction works will produce excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items. These impacts are negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

Mitigation Measures

(i) Prepare and implement spoils management plan;
(ii) Avoid stockpiling of excess excavated soils;
(iii) Coordinate with for beneficial uses of excess excavated soils or immediately dispose to designated areas;
(iv) Recover used oil and lubricants and reuse or remove from the sites;
(v) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
(vi) Remove all wreckage, rubbish, or temporary structures which are no longer required;
(vii) Request PMU/ to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.

191. **Solid waste management:** The various types of solid wastes generated during the construction phase will be segregated into two main categories, viz., non-hazardous and hazardous.

(i) **Mitigation Measures**

(i) The excavated soil will be used for refilling.
(ii) General refuse generated on-site will be collected in waste skips and separated from construction and chemical waste.
(iii) A local authorized waste handler will be employed to remove general refuse from the site, separately from construction waste and hazardous wastes, on regular basis to minimize odour, pest and litter impacts.
(iv) Burning of refuse on construction sites will be prohibited.

192. **Accessibility:** Hauling of construction materials and equipment can cause traffic problems. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor will be required to:

Mitigation Measures

(i) Prepare and implement a Traffic Management Plan
(ii) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;
(iii) Schedule transport and hauling activities during non-peak hours;
(iv) Locate entry and exit points in areas where there is low potential for traffic congestion;
(v) Keep the site free from all unnecessary obstructions;
(vi) Drive vehicles in a considerate manner;
(vii) Coordinate with Traffic Police for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours; and
(viii) Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.

193. **Work Camps:** Operation of work camps can cause temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants. Potential impacts are negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

(ii) Consult with PMU/ before locating project offices, sheds, and construction plants;
(iii) Minimize removal of vegetation and disallow cutting of trees;
(iv) Provide drinking water, water for other uses, and sanitation facilities for employees;
(v) Ensure conditions of liveability at work camps are maintained at the highest standards possible at all times;
(vi) Prohibit employees from poaching wildlife and cutting of trees for firewood;
(vii) Train employees in the storage and handling of materials which can potentially cause soil contamination;
(viii) Recover used oil and lubricants and reuse or remove from the site;
(ix) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
(x) Remove all wreckage, rubbish, or temporary structures which are no longer required; and

(xi) Request PMU/ to report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.

194. **Social and Cultural Resources:** For this subproject, excavation of land will occur at locations known not to have archaeological values, so it could be that there is a low risk of such impacts. Nevertheless, the construction contractor will be required to:

(xii) Follow the protocol for chance finds in any excavation work;
(xiii) Stop work immediately to allow further investigation if any finds are suspected; and Inform PMU/ if a find is suspected and take any action they require ensuring its removal or protection in situ.

195. **Occupational Health and Safety:** Workers need to be mindful of the occupational hazards which can arise from working in height and excavation works. Potential impacts are negative and long-term but reversible by mitigation measures. The construction contractor will be required to::

(i) Comply with all national, state and local labour laws;
(ii) Following best practice health and safety guidelines such as IFC's General EHS Guidelines[14]
(iii) Develop and implement site-specific occupational health and safety (OHS) plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective equipment; (c) OHS Training[15] for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;
(iv) Conduct work in confine spaces, trenches, and at height with suitable precautions and using standards and safe construction methods; do not adopt adhoc methods; all trenches deeper than 1.5 m shall be provided with safety shoring/braces;
(v) Ensure that qualified first aid is provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;
(vi) Provide medical insurance coverage for workers;
(vii) Secure all installations from unauthorized intrusion and accident risks; and
(viii) Provide supplies of potable drinking water;
(ix) Provide clean eating areas where workers are not exposed to hazardous or noxious substances;
(x) Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;
(xi) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;

[14]https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES

[15] Some of the key areas that may be covered during training as they relate to the primary causes of accidents include (i) slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; (iv) workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence, but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective, and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker.

(xii) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;
(xiii) Ensure moving equipment is outfitted with audible back-up alarms;
(xiv) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate;
(xv) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively;
(xvi) Conduct regular health check-ups for workers;
(xvii) Provide periodical awareness camps and special trainings for workers for health issues and risks in construction sites
(xviii) An emergency plan shall be prepared duly approved by engineer in charge to respond to any instance of safety hazard.

196. VCICDP Health and safety plan in response to COVID-19 is an integral part of the environmental management plan (EMP).

(i) The COVID 19 H&S plan may be updated as and when new guidelines are issued by the governments, and international organizations such as WHO and ADB.
(ii) All the contractors be advised to prepare site-specific plan compliant with government circulars, guidelines and public health advisories, elaborating the arrangements and measures for implementation of the H&S plan.

197. **Post-construction clean-up:** Damage to existing land due to debris, spoils, excess construction materials, etc. Mitigation may include following actions;

(i) remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and,
(ii) all excavated areas shall be reinstated to the original condition, all disrupted utilities restored, the area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up, all hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the prescribed guidelines set out in the contract specifications.

C. Operation Phase Impacts and Mitigation Measures

198. The operational phase impacts are related to the operation and maintenance of established infrastructure facilities in the start-up area under this subproject that include water supply treatment and distribution, roads and drains, power supply and green areas. During its design life (~30 years), infrastructure shall not require major repairs or refurbishments and should operate with little maintenance beyond routine actions required to keep the equipment in working order. Operation of facilities will be gradual and is as per the establishment and operation of industries. Fully capacity utilization is anticipated only after entire start up area is occupied by industries and operationalized.

199. During the operation phase, the stability and integrity of the system will be monitored periodically to detect any problems and allow remedial action if required. Any repairs will be small-scale involving manual, temporary, and short-term works involving regular checking and recording of performance for signs of deterioration, servicing and replacement of parts. Therefore, this will not cause significant impacts. The industry establishment and

commencement of their operations in the industrial cluster will be after this subproject funded under VCICDP Project 2 is implemented and the impacts during that period are not considered here.

200. Given the adaption of standard design, construction and operation procedures as per the prevailing specification and standards in respective infrastructure sector, no notable impacts envisaged during the operation of the infrastructure. Water treatment and disinfection in the WTP is one of the main operation activities of the water supply system. This activity produces wastewater, solid waste, and poses safety risk due to handling of chlorine. Backwash water/wastewater from the process is recovered and recirculated in the WTP, no wastewater will be generated from water treatment process. Water treatment process will generate sludge. WTP will include facilities to collect, and dry sludge, and dried sludge will be used as manure in green areas. No negative impacts envisaged. Chlorine facility will include necessary safety features and equipment, and staff will be provided personnel protection equipment.

201. Pumps will generate noise. Pumps will be installed in pumping stations, which are enclosed buildings with restricted access and provided with adequate buffer around. Project area is mostly barren, vacant and agriculture lands, which will be converted into industrial plots. Therefore, no notable adverse impacts due to noise envisaged. Operation of diesel generator sets will also generate noise and emissions. Procurement of CPCB approved generators and standard operation and maintenance will ensure that emissions and noise are minimal. Prior permission for operation of generator from APPCB shall be ensured.

202. The operation of the power distribution lines near community areas may expose the locals to electrocution hazards. Given that project area to be developed as industrial cluster, and there will the safe horizontal or vertical clearances to the power infrastructure, no notable impacts envisaged. Nevertheless, distribution components poses risk but not significant. The probability of an incident resulting in fatality will be higher if appropriate health and safety measures are not enforced by the operator. Used oils from transformers will be disposed through the agencies authorized by APPCB.

203. Traffic on internal roads will cause air and noise pollution in the vicinity of the sub project area. Vehicular emission and vehicular noise will be the principal source of pollution during operation stage of roads. Proposed provision of green belt around the industrial area, trees along the roads will minimize the impact. Enforcement of pollution under control (PUC) certificate for all vehicles by Road Transport Authority will ensure that the vehicular emissions are minimal. Roads are built to IRC standards, and chance of accidents will be minimal if traffic and road safety measures are strictly enforced. APIIC will ensure that traffic safety measures are strictly enforced in the industrial cluster.

204. The proposed stormwater drainage system will cater to storm runoff and is not designed to carry industrial or domestic wastewater. Separate wastewater management system is proposed in the industrial clusters, which will be implemented by APIIC with GOAP funding. Any discharge of wastewater from industries or any other establishments will pollute the storm water and will degrade the receiving water bodies. APIIC shall ensure that proper wastewater management system is provided prior to start of operation of any industrial activity in the start-up area. APIIC shall ensure that no wastewater is discharged into storm water drains. Siltation due to poor or lack of maintenance of drains and accumulation of solid wastes may clog the drains. This may result is accumulation of putrescible organic materials causing odour nuisance and pollution to the receiving water bodies. This may also attract vectors of communicable diseases that could affect public health.

205. Following measures are suggested for implementation/compliance during the operation phase:

Mitigation Measures:

(i) Ensure that standard operating procedures are adapted for all infrastructure, and ensure preventive, periodic, and emergency maintenance activities as needed; provide adequately trained operators and maintenance staff
(ii) Provide necessary personnel protection equipment, use appropriate maintenance equipment and tools
(iii) Recirculate backwash/process wastewater in the WTP, and ensure that no wastewater discharge
(iv) Ensure that sludge is dried properly prior to its disposal or reuse
(v) Operate chlorination facility with all safety features and trained staff, ensure emergency procedures
(vi) Diesel generator sets shall maintain stack height as per CPCB regulation
(vii) Dust suppression measures such as water sprinkling shall be carried out during infrastructure repair and maintenance activities.
(viii) Construction safety measures shall be adapted during the repair and maintenance works; adequate PPE's shall be provided workers.
(ix) Implement health and safety measures in power infrastructure operation and maintenance as per applicable standards and guidelines
(x) Dispose waste oil or any other hazardous material via agencies authorized by APPCB
(xi) Enforce road and traffic safety rules in the industrial cluster strictly
(xii) Ensure that wastewater management system is developed prior to establishment and operation of any industry in the start up area
(xiii) Ensure that wastewater is not discharged into stormwater drains
(xiv) Ensure regular cleaning and maintenance of drains

D. Cumulative, Indirect and Induced Impacts

206. **Cumulative Impacts:** For the ADB subproject of start-up area development, no cumulative impacts are anticipated as the proposed site is mostly comprised of barren land and no existing major industrial activity is happening in the vicinity of the site. The components to be developed and implemented by GoAP funding will be constructed only after the start-up area works are completed.

207. Spread over vast area of 938 ha, with no other development activities, the proposed industrial estate works during start-up area construction will not generate cumulative impacts in terms of dust, noise, water resources contamination, soil contamination, traffic, blocking of accesses, health and safety hazards and disruption to social services and economic activities.

208. **Indirect and Development induced impacts:** While the proposed subproject is located close to urban and semi-urban areas, better and available employment opportunities and transport operations may lead to rapid urbanization in future.

209. **Beneficial Impacts:** The influx of industrial sectors such as Building Materials Industry/Non Metallic minerals, Electronics and Consumer Durable Industry, Food and Agro Processing Industry, Engineering Industries (Machinery/ Electrical Equipment's/ Automobile etc.,), Apparels and Textile Industry, Chemical and Pharma Industry, Logistic and Ware house and MSME (includes Leather, Plastics, wood etc.,) will help in overall economic development of the state, resulting in attracting skilled workforce and enable improvement of quality of life of people. Providing Common infrastructure at the Industrial Park such as Water Supply, etc., will help in attracting different sectors of industries due to availability of

adequate infrastructure to better manage the industrial waste and wastewater ensuring environmental compliance.

210. The long-term effects of these developed industrial estates on poverty reduction are, consequently, expected to be significantly positive. During operation stage, economic activities supporting ancillary industries, trade, transport, etc. will increase due to increase in industrial activities is also expected to improve development of urban centres with amenities like housing, educational institutions, hospitals, etc.

211. **Adverse Impacts:** Any developmental activity in its wake will bring about some adverse impacts associated with its activities. For an Industrial Cluster based on the possible worst-case emissions and waste generation scenario, prediction of impacts helps in the preparation of a sound environmental management plan which has to be executed during the on-going activities for the proposed project to minimize the adverse impacts on the environmental quality. Provision of effective connectivity through internal transport, efficient management of industrial cluster operations, adoption pollution control technologies by the industries and efficient management of hazardous waste/ operations will be important to manage any adverse impacts due to sub-project operations. APIIC has conducted an EIA study, and developed environmental management plan, and monitoring plan, and obtained environmental clearance from the MOEFCC (Appendix 2). Further, individual industrial units /member industries, depending on the type and capacity, will conduct EIA studies if it falls under the ambit of EIA Notification, 2006. All industries will obtain consent to establish (CTE) prior to establishment and consent to operate (CTO) prior to start of operation from APPCB. During the operation, member industries will monitor all environmental parameters such as emissions, air quality, noise levels, treated wastewater, water quality, etc., within their industry premises as per the stipulations laid by MOEFCC and APPCB in their respective Environmental Clearance, CTE and CFO. APPCB will monitor the compliance and validate the CTOs periodically, and in case of non-compliances actions will be taken as per the rules, including cancellation of CTO.

212. **Adaption to Climate Change:** A separate climate risk assessment has been conducted for the overall VCICDP project considering climate risks to project subcomponents located in areas prone to potential cyclones, heavy rains and flooding. The subproject components may face climate risks due to cyclones natural events, suitable mitigation measures highlighted in the climate risk study will be considered for implementation.

213. **Greenhouse Gas Emissions:** Greenhouse gas (GHG) emissions that will be generated from the construction of the subproject facilities are expected to be minimal. Emissions during construction will derive from the use of energy, including gasoline, diesel and electricity, by construction machinery and vehicles and by consumption of construction materials, traffic congestion for short durations, etc. Loss of tree cover will also contribute towards reduction of carbon sink. After construction is completed, twice the number of trees will be planted as per the regulatory norms. GHG emissions are expected to be reduced due to increased tree plantations, reduced traffic congestion and implementation of measures such as solar lights along the road sections and near junction areas.

214. GHG emissions during the operation phase of the industrial estate are expected to increase based on the types of industries located in the estate. In cases where the emissions are significant, APIIC will quantify direct emissions from the facilities within the project boundary and indirect emissions associated with the off-site production of power used by the facility. APIIC / facilities in the industrial estate will conduct quantification and monitoring of greenhouse gas emissions annually in accordance with internationally recognized methodologies. Technical and financially feasible options to offset such GHG emissions will be evaluated and implemented.

215. **Unanticipated Impacts during Construction and Operation:** In the event, unanticipated impacts become apparent during project implementation, the borrower will: (i) inform and seek ADB's advice; (ii) assess the significance of such unanticipated impacts; (iii) evaluate the options available to address them; and (iv) update the IEE including EMP. ADB will help the borrower mobilize the resources required to mitigate any adverse unanticipated impacts or damage.

VI. ANALYSIS OF ALTERNATIVE

A. With- and Without-Project Alternatives

216. 'Without-project' or 'do-nothing' Alternative': Availability of government barren land and potential of industrial development in the vicinity is an advantage for development of this subproject. Many employable youths are lack of employment. Without project alternative, it will be difficult to boost the industrial development and improve the socio-economic conditions of people.

217. With Project Alternative: Government of Andhra Pradesh (GoAP) has embarked on major initiative of positioning Chittoor District as the future industrial hub for various industrial sectors in an endeavour to attract investments from National and International Players across the globe. Barren land availability is one of most important advantage for industrial development.

218. The 'with project' alternative will contribute to the realization of improved socio-economic conditions, employment generation, and increase in economy.

B. Alternatives Relative to Planning and Design

219. Alternative Design: As the proposed site is having sea and settlements, proper planning considering green buffers by following GoI rules and regulations was carried out.

1.	**Project Need – No Project Alternative**
Type of alternative	'No project' alternative
Description of alternatives	Availability of government barren land and potential of industrial development in the vicinity is an advantage for development of this subproject. Many employable youths are lack of employment. Without project alternative, it will be difficult to boost the industrial development and improve the socio-economic conditions of people.
Selected Alternative	Government of Andhra Pradesh (GoAP) has embarked on major initiative of positioning Chittoor District as the future industrial hub for various industrial sectors in an endeavor to attract investments from National and International Players across the globe. Barren land availability is one of most important advantage for industrial development. Given the large-scale benefits to the population and environment, 'no project' alternative is considered inappropriate
2	**Site Alternatives**
	Alternative Site 1: Thottambedu and B.N.Kandriga Mandals, Chittoor District, A.P Latitude 13°44'55.20"N; Longitude 79°47'38.75"E
Description of alternatives	Different site alternatives were considered for finalization of the industrial cluster keeping in view various factors relating to: 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; etc.
Selected Alternative	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, Kothapalem, Alathuru and

	B.S.Puram In Thottambedu and B.N.Kandriga Mandals of Chittoor District, A.P) has been selected for the Development of Project.
3	**Site Alternatives[16]**
Type of alternative	Alternative Site 2: Ojili Mandal of SPS Nellore District, A.P Latitude 13°56'46.43"N; Longitude 79°49'20.43"E
Description of alternatives	Different site alternatives were considered for finalization of the industrial cluster keeping in view various factors relating to: 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; etc. 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.
Selected Alternative	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, Kothapalem, Alathuru and B.S.Puram In Thottambedu and B.N.Kandriga Mandals of Chittoor District, A.P) has been selected for the Development of Project.

[16] Source: EIA study conducted for obtaining Environmental Clearance and CFE for Industrial Park at South block Srikalahasti node.

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Public Consultation and Information Disclosure

220. Meaningful stakeholder consultation and participation is part of the project preparation and implementation strategy. A consultation and participation strategy is being designed and will be implemented with the assistance of consultants. By addressing stakeholder needs, there is greater awareness of the benefits and "ownership" of the project among stakeholders, which in turn contribute to sustainability. The consultation process during the project preparation has solicited inputs from a wide range of stakeholders, including government officials, NGOs, residents near the subproject locations and towns, marginalized/vulnerable beneficiary groups, and project-affected persons (PAPs).

221. Consultation, participation, and disclosure will ensure that information is provided and feedback on proposed subproject design is sought early, right from the subproject preparation phase, so that the views/preferences of stakeholders including potential beneficiaries and affected people can be adequately considered, and continue at each stage of the subproject preparation, processing, and implementation.

222. Affected persons will be consulted in the preliminary stage and subsequently to ensure: (i) incorporation of their views/concerns on compensation/resettlement assistance and environmental impacts and mitigation measures; (ii) inclusion of vulnerable groups in project benefits; (iii) identification of help required by affected persons during rehabilitation, if any; and (iv) avoidance of potential conflicts for smooth project implementation. It will also provide adequate opportunities for consultation and participation to all stakeholders and inclusion of the poor, vulnerable, marginalized, and affected persons in the project process.

223. Relevant information about any major changes to project scope will be shared with beneficiaries, affected persons, vulnerable groups, and other stakeholders.

224. A variety of approaches will be adopted such as stakeholder consultations regarding the scope of the environmental and social impact studies before work commences, and they will be informed of the likely impacts of the project and proposed mitigation based on the draft IEE and resettlement plan (as applicable) reports prepared. The views of different stakeholders will be recorded and documented and indicate how these have been taken into account in project development.

225. The key stakeholders will be consulted during project preparation includes:

(i) Project beneficiaries;
(ii) Andhra Pradesh Industrial Association (s)
(iii) Elected representatives, community leaders, religious leaders, and representatives of community-based organizations;
(iv) Local NGOs;
(v) Andhra Pradesh Pollution Control Board
(vi) local government and relevant government agency representatives, including local authorities responsible for land acquisition, protection, and conservation of forests and environment, archaeological sites, religious sites, and other relevant government departments;
(vii) residents, shopkeepers, and business people who live and work alongside the industrial estates where facilities will be built;
(viii) Custodians, and users of socially and culturally important buildings;
(ix) VCICDP PMU and consultants; and ADB, Government of Andhra Pradesh and the Government of India.

226. This process shall be extended during implementation. Appointed PMSC (Project Management and Supervision Consultant) agency and APIIC Environment and Social Safeguards officer shall develop public consultation and disclosure program which is likely to include (i) Public meetings with affected communities to discuss and plan work programs and allow issues to be raised and addressed once construction has started; and (ii) smaller-scale meetings to discuss and plan construction work with individual communities to reduce disturbance and other impacts, and provide a mechanism through which stakeholders can participate in subproject monitoring and evaluation.

227. The following documents will be submitted to ADB for disclosure on its website:
(i) final IEE
(ii) a new or updated IEE and corrective action plan prepared during project implementation, if any and
(iii) Environmental monitoring reports

228. VCICDP PMU will send written endorsement to ADB for disclosing these documents on ADB's website. VCICDP PMU will also provide relevant safeguards information in a timely manner, in an accessible place and in a form and languages understandable to affected people and other stakeholders.

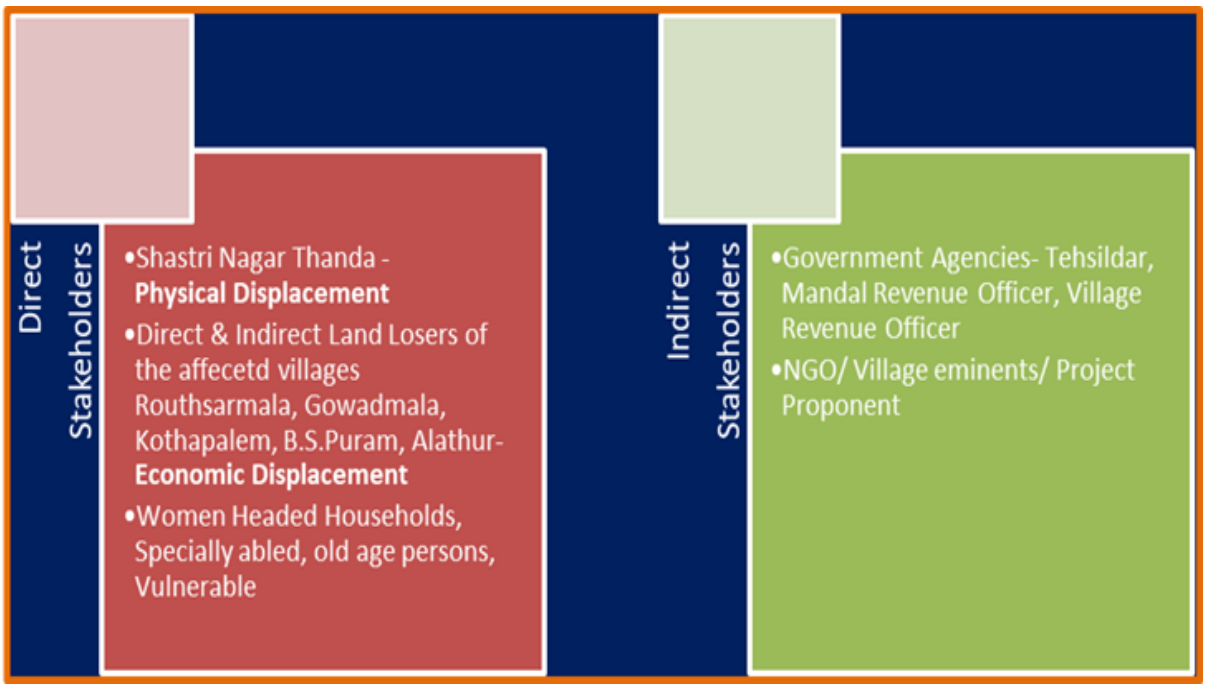
B. Stake holders Consultation

229. Stakeholder Consultations help to actively involve the direct and indirect affected from the project. The consultations help to maintain rapport and understanding of the project and to account the concerns and opinions. The likely impacts can be minimalized from the conceptualization stage and inputs can be discussed with the other teams.

1. Stakeholder Identification

230. Stakeholders were identified with the understanding of the project nature, project location, secondary data collections and discussion with project proponent and related government agencies. The inclusive involvement of stakeholders identified with that special emphasis on affected by physical, economic displacement and vulnerable groups of society due to the project.

Figure 24: Stakeholder Identification



2. Stakeholder Consultation Methodology

231. Stakeholder consultations and discussions started during the primary data collection of census socio economic survey of the physical and economic displaced of the affected persons. The stakeholders were approached with the help of VRO of the respective village and client. The consultations were conducted with direct and indirect land losers, structure impacted, agricultural labourer, cultivators, petty shop owners, women, old age persons, especially abled, etc. During the consultation's women, old age persons and especially abled participation were highly encouraged to express their concerns, expectations, suggestions and comments. Table below represents the consultations meeting conducted.

Table 31: Consultations Conducted

Stakeholder Consultations	Date of Consultation	Place of Consultations	No of Participants	Participants	Consultations methods
Sastriyanadhi Colony	September 18, 2018	Sastriyanadhi Colony	Men-9 Women-18	Physical displacement impacted- Household Head, Women, and old age persons, especially abled. The direct impacted were present Representatives of APIIC Officials Representatives of LNTIEL	Focus Group discussion, Interview method during Census Socio Economic Survey
Primary Welfare School-Sastriyanadhi Colony		Primary Welfare School-Sastriyanadhi Colony	Men-6 Women- 7	Headmaster of Primary Welfare School Representatives of APIIC Officials Representatives of LNTIEL	Focus Group discussion
Routhsarmal		Routhsarmala	Men- 26	Economic	Focus Group

Stakeholder Consultations	Date of Consultation	Place of Consultations	No of Participants	Participants	Consultations methods
a Village		Village	Women- 10	Displacement- Direct and indirect land losers, agricultural labourers, cultivates, Women, old age	discussion, Interview method during Census Socio Economic Survey
Kothapalem Village	September 19, 2018	Kothapalem Village	Men- 10 Women-15		
Gowadmala Village		Gowadmala Village			
B.S.Puram Village					
Alathur Village	Due to demise of village personnel. Therefore, the meeting was cancelled	**No Meeting**			Interview method during Census Socio Economic Survey
Tahsildar, Village Level	September 18, 2018	Tahsildar office	Men- 6 Women-1		Interview method and discussion
APIIC Client	September 18, 2018	APIIC Client office	Men- 4 Women-1		Interview method and discussion

232. Signatures list of the Project Affected Persons attended Stakeholder Consultation is given as Error! Reference source not found.

3. Stakeholder Consultation Minutes

Minutes of Consultation			
Consultation Place	SastriyanadiColony	**Date**	September 18, 2018
Purpose	Resettlement & Rehabilitation of Sastriyanadhi Colony	**Village**	SastriyanadiColony
Stakeholder Involved/ Attendees/ Participants	Sastriyanadhi Colony people, APIIC representatives, LNTIEL Team		
Sastriyanadhi Colony will be relocated which has 50 houses. The houses are mostly semi pakka or pakka houses. The consultations were conducted in the Colony which focused to their living standards, willingness to shift, Women's' role at various levels, etc.			
• Hamlet residents are willing to relocate from the present location • Expectations from relocation are individual family housing, approach roads, electricity, running water taps in the house • Hamlet residents wants individual housing for the adult family members such as separate house for father and son • Hamlet residents wants to stay together and not separated • They don't want to shift to near to the SC colonies which are nearby • Hamlet should be separately established in another area • Houses have no individual water connection • Presently men and women are engaged in agricultural labourers or NREGA for their livelihood • Agriculture and related work are less in nearby areas due to lack of irrigation facility • Crops are rain fed in the region • In the Colony drinking water is available and the quality is good, however, the taps are situated in common areas • Every household has electricity which is being provided by the government for free • Nearby market area for grocery is at Palamala village which is approx. 5.0 km away • For higher education above 7th standard is in Shrikalahasti town • Hospital and medical facility for pre and post maternity is at Shrikalahasti town which is 11.0			

Minutes of Consultation
km away • From the settlement 5 children are studying in high school and about 20 children in the primary school • Many children don't continue higher education • Liquor consumption is a common practice among the men in the settlement, but women and children are not troubled as no nuisance is created by them • Some of the major festivals celebrated in the settlement are Sankranthi, Ganesh Chathurthi, Dusherra, Diwali, Ugadi • Most of the elderly persons are getting the benefit of old age pension scheme • Marriageable age of women in the settlement is 20 years and for men it is 22 years of age • Mostly the marriage is within the community or in the nearby village, however, there are no restrictions • Waste of the settlement is outside the village without segregation is burned • For manure they collect the organic waste which can be decomposed, and rest of the waste is thrown mostly individually and burned • Ration is available at government ration shops in which only rice and sugar are only available • Women participation in decision making at various levels such as household, community is considered very important • Some of the hamlet residents have trees in the house for which they want compensation • Some of the persons in the hamlets does not have Aadhaar card due to which they are not getting benefits of the government schemes • Women are keen to participate if skill development training is given to them • During consultation a woman who lost her one eye demands some extra provisions
Conclusion • Residents willingness to shift was expressed in the consultations with better amenities • People are illiterate or barely educated • They have no skill training or any specific technical and/or artisan skill • Provision for any specially abled person will be provided as per the provisions of the rules and regulations • Willingness to participate in the skill development program is a positive sign • Housing should be with the basic amenities as per the prevailing government schemes • Women keenly participated during the consultations as well as during Census Socio Economic survey also showed the interest • Around the area there is a school Tribal welfare school, water tank • The premises were clean and everyone has toilets but the usage behaviour is less • People of the Colony don't wish to mingle much with other caste people • The demand of the people are better housing facilities with basic amenities and provisions for employment

Minutes of Consultation			
Consultation Place	Routhusuramala	**Date**	September 18, 2018
Purpose	Stakeholder Consultations at Village Level	**Village**	Routhusuramala
Stakeholder Involved/ Attendees/ Participants	Direct and indirect land owners, APIIC officials, LNTIEL Team		
Affected persons losing the land, the expectations of land losers			
• Drinking water availability in the village • In the house water taps are not available • The daily water requirement is fulfilled by the water taps in the common areas • Telugu Ganga water scheme water and rain fed agriculture are the source of water irrigation • There are almost 87 households in the village • Some of the village people are not able to get the benefit of government pensions as there age is mentioned in the Aadhaar card and ration card is mentioned wrongly • Presently the livelihood in the village is mainly agriculture labourer and NREGA • NREGA funds have not been received from many months • Daily wages for men and women are Rs.120/day • There are no learned skill such as technical and artisans			

Minutes of Consultation
• From the village more than 20 children are studying higher education above 10th standard • Women are safe and secured no incidences of eve teasing nature is reported • The village people want to invest the money in buying lands, paying debts with the Compensation amount • Village people are willing to start small shops for a continuous income with the Compensation amount • Women together wants to start dairy farming business with the Compensation amount • Women in the village participate in the decision-making process at household as well as community level • Waste in the village is disposed outside including plastics are burned • Wet waste or organic waste is decomposed to be used as manure • Every household have toilets and they behavioural change in using it • Appropriate water supply in the village but due to repair of pipeline and motor the supply gets disturbed • Houses in the village are in decrepit condition and during the rainy season water leakage is one of the most common problem • Electricity in the village is not regular due to continuous breakage of cables • Require ration shop in the village as presently, it is about 5.0 km away • Kerosene is not easily available in the ration store • Village people expressed their concern that private company operating in the region assured them employment • Till date they have not fulfilled their assurance and they don't allow them to apply • The previous experience has led them to doubt about the new development • There are some persons who lost their one eye due to working for the quarries • People in the village are facing problem in old age pensions • Drinking among men is a common but women and children have not faced any trouble • People are agitated that if any assurance is given to them during the time of taking land and later if it is not fulfilled • They are willing to learn new skills for employment
Conclusion • Skill development training program will be suggested • No employment assurance was given to the people • Regarding the other companies' assurance, we told that we are for different project • Problems in identity card to be reported to the appropriate authority and they will help • Suggestions of nearby ration shop has been noted and as per the appropriate rules and regulations the suggestions will be proposed

Exhibit 5: Interacting with the Headmaster, Tribal Welfare School Sastriyanadhi Colony

Exhibit 6: Interacting with the School Children, Tribal Welfare School Sastriyanadhi Colony

Notes

Date: 18.09.2018.
G.P. Tribal Welfare School.
Class: 1st to 5th Std.
Shastri Colony.
Head master cum Teacher: G. Wallamma.
Techer Resi: Srikalahasti.
Staff: 1 Teacher. M.No: 9[illegible]630875247
1 cook.
Children: 18.
Anaganwadi Shastrinagar.
Anaganwadi: 15 children.
Teacher: Only cooks.
Teacher: E. Annama, Srikalahasti.
M.No: 9121125017.

G. Vallamma
THE HEAD MASTER
G.P.T.W. Primary School
Routh Suramala, Sastri Colony,
Thottambedu (M)

Exhibit 7: Details of the school attested by the Head Master

Exhibit 8: Interacting with the residents of Sastriyanadhi Colony

Exhibit 9: Interacting with the women residents of Sastriyanadhi Colony

Minutes of Consultation			
Consultation Place	Tribal Welfare Primary School & AnaganWadi	**Date**	September 18, 2018
Purpose	Resettlement & Rehabilitation of Tribal Welfare Primary School, Sastriyanadhi Colony	**Village**	Sastriyanadhi Colony
Stakeholder Involved/ Attendees/ Participants	School Teacher and Head of the Tribal Welfare School, APIIC representative, LNTIEL Team		
Tribal welfare school and anaganwadi is across the road of the village. Suggestions, comments for the school rehabilitation were asked			
• Tribal Welfare primary School opened in 2006 • Only one teacher operates for the classes from 1st to 6th standard • At present the school strength are 18 students which are from the Sastriyanadhi Colony • Infrastructure wise the school has a single classroom a porch area, ground area, toilets • The school is operating from one single rooms for 1st to 3rd standard and the porch area outside for 4th to 6th standard • The school timings are 9:00 am to 3:00 pm • Females in the hamlet generally stop going to school after 6th standard • The teacher revealed that there are security reasons such as eve teasing incidents from other village especially from SC colony • The reason hamlet people are not willing to shift with other settlements is mainly security • The drinking water in the school is available • The quality of drinking water facility is good • Midday meals is available in the school with the prescribed diet chart for students • Eggs are part of the meal which is provided by government • For each student the subsidize meal accounts to be Rs 4.35/- • The school teacher is expecting the school to be big with more than one class room • Separate toilet for girls and boys • Digital classroom facility with computer and internet connection for the children • Outdoor play area with sufficient facilities for children • Teacher is agreeing to the school relocation with better amenities • The teacher comes to school through local transport buses from her village to school			

• Many in the Colony don't value the benefit for education
Conclusion • Hamlet residents don't understand the value of education • Females are not encouraged for higher education due to the reported cases of eve teasing • Relocation of School has to be near to the Colony • Facilities should be provided in school • To encourage hamlet people for higher education is by building Pucca roads or approach road is provided directly to the main road for village buses • Reporting of such incidents should be made aware to the authority • Learning of self- defence techniques should be encouraged

Exhibit 10: Interacting with the residents of Routhusuramala

Exhibit 11: Interacting with the residents of Routhusuramala

Exhibit 12: Interacting with the women residents of Routhusuramala

Minutes of Consultation			
Consultation Place	Kothapalem Village	**Date**	September 19, 2018
Purpose	Stakeholder Consultations at Village Level	**Village**	Kothapalem
Stakeholder Involved/ Attendees/ Participants	**Direct and Indirect Land owners, APIIC Team, LNTIEL Team**		

- Compensation amount the village people expecting for land is Rs.10.0 lakh/acre
- The compensation amount will be invested in buying new lands
- Compensation amount will also be utilized for clearing the debts and start small business like small retail shops
- Some of the farmers have bores in the agriculture land for which they have taken credit to be paid off
- Land owners expecting employment for the graduates in the village
- Crops like groundnut and paddy are cultivated in the farm lands
- Among most of the lands half of it are two season crops and the remaining are one season crop
- Agriculture in the region is rain fed
- Presently the livelihood is agriculture in their own fields
- Also they are engaged as agriculture labourers and work in NREGA
- Agriculture is the only employment option at present
- Some of the village are auto drivers also
- Women in the region are also interested in skill development training program at present there are no technical or artisan's skill among the people
- Higher education children study in Shrikalahasti town
- Medical facilities is also available in Shrikalahasti town
- Village people have not reported any unruly incident among the women, the village is safe and secure
- Marriage age of girls is 20 years and boys is 22 years approximately
- Marriage is among the village families or nearby villages only
- Dowry is common practice among the village people
- Women in the study area participate in decision making at household and community level
- Drinking water is available in the village and the quality is good, however due to any damage or repairs there are problems
- Many farms have bore wells for water, while Telugu Ganga Water scheme is used for irrigation and the fields are rain dependent
- The farm land soil is fertile, the crops in the region include paddy groundnut and sugarcane
- The people are taking the benefits of government scheme and they are approachable of the people
- Presently many of the farmers have taken benefit of the government loan of Rs.40,000/ acre at the interest rate of 0.75%

Minutes of Consultation
• The houses in the village have toilet facilities and behavioural change is gradually happening among people • Waste is disposed outside the village including plastics are burned • Wet waste and organic waste is decomposed and used as manure • Approximately 35% of the household have two families like father and son living in one house • Pollution problem in village is not there, but occasionally foul smell from industry which is 2.0 km away • The locals are not satisfied with the enjoyment survey as in many cases barren lands is recorded as barren lands in spite of cultivable land • Village infrastructure such as internal roads should be improved • Water taps at the household level • Approximately 20 members are especially abled are residing in the village • The major festivals celebrated are Sankranti, Ganesh Chathurthi, Dusherra, etc • Non veg food is prevalent in the region but it is consumed weekly once only • Entertainment among the household is television
Conclusion • Skill development training will help in improving their earning capacity • No assurance of employment was given • If especially abled lands are going to lose their lands, as per the provisions the compensation will be given • As per the studies it is know that most of the land

Exhibit 13: Interacting with the residents of Kothapalem

Exhibit 14: Interacting with the women residents of Kothapalem

Exhibit 15: Interacting with the residents of Kothapalem

<table>
<tr><th colspan="4">Minutes of Consultation</th></tr>
<tr><td>Consultation Place</td><td>Gowdamala Village</td><td>Date</td><td>September 19, 2018</td></tr>
<tr><td>Purpose</td><td>Stakeholder Consultations at Village Level</td><td>Village</td><td>Gowdamala & BS Puram</td></tr>
<tr><td colspan="2">Stakeholder Involved/ Attendees/ Participants</td><td colspan="2">Direct & Indirect Land Losers of Gowdamala & BS Puram, APIIC Team and LNTIEL Team</td></tr>
<tr><td colspan="4">

The compensation amount will be used to buy land, clear the credits
They also want to start small shops for regular income in the area
Many of the villagers are losing their entire lands which is their only source of livelihood
They are afraid that after the lands how will they survive
The young persons in the village are expecting employment of skilled as well as unskilled level
Some of the village people are skilled in driving and welding to earn their livelihood
Some people during consultations objected that in the enjoyment survey their names were not included, they are:
<table>
<tr><th>Survey No</th><th>2. Name</th></tr>
<tr><td>68/1, 68/2</td><td>4. Mitchala Ramanamma</td></tr>
<tr><td>5. 66/1</td><td>Chilukuri Chengalrailu, ChinthaKrishnayya, Chintha Subramaniyam, Mitchala Chinna Mathayya</td></tr>
</table>

APIIC is a government body which is providing opportunities to the private companies, but the village people are not assured of the employment in these private companies
The industry set up should be planned in such a way that non-polluting industries should be near to the village
Skill development training program for the educated and uneducated ones should be designed
The skill development training should be for both men and women
Hospital should be constructed in the village before the industrial set up
Presently most of the villagers are engaged as daily wagers who work as agricultural labourers
Drinking water quality is good and available
The source of water irrigation in the farmland is Telugu Ganga irrigation project, individual bore wells and rains
The soil is fertile in nature and there are two season crops
Government schemes are being used by the village people
At times foul smell from industries nearby comes
Women are involved and their decision are valued both at household and community level
Waste from the household is disposed outside the village and including plastics it is burned
Wet and organic waste is decomposed to be used as manure

</td></tr>
</table>

Minutes of Consultation
• Each household have toilets and gradually behavioural change is coming in them • For higher education which 7th standard and above is in Srikalahasthi • For medical facilities including pre and post birth deliveries is referred to Srikalahasthi • Major festivals celebrated are Sankranti, Ganesh Chathurthi, Dusherra • Ration shops are 5.0 km away which they want within the village • No unruly incidents have been reported against women • Recreational activities of the people are watching cinema or television • Liquor consumption is less among the village people; however, no problem has been caused to women and children.
Conclusion • The survey numbers which are not recorded under the enjoyment survey because these lands are government lands which are not assigned to any farmer • These survey number once identified will be confirmed that they are under their name or not • Farmers working on the unregistered land will be counted as land less farmers/ agricultural labourers • The suggestion that non-polluting industries should be around the villages has been conveyed

Exhibit 16: Interacting with the residents of Gowdamala & BS Puram

Exhibit 17: Interacting with the residents of Gowdamala & BS Puram

Exhibit 18: Interacting with the residents of Gowdamala & BS Puram

4. Outcome of Consultations

Table 32: Summary of Consultations Outcome

Project Stakeholder				
Consultations	**Stakeholders**	**Concerns and Issues**	**Mitigation Measures proposed / Reason for not being able to address the concern**	**Influence (H=High, M=Medium, L=Low)**
Shasthri Nagar Colony	Physical displacement impacted	1. 26 PAF of the colony are losing their agriculture land. 2. Structure loss, in case of rehabilitation in the future 3. Major Residential Loss (if R&R takes place) 4. Few land losers 5. Willingness for shifting 6. Separate area required 7. Security of women 8. Separate houses for each adult individual family 9. Appropriate Amenities 10. Education impairment 11. Employment options are less 12. Vulnerable- Women Headed Household, Houses with especially abled persons and old age persons, BPL, SC, ST social categories 13. Tress loss to	1. Separate Colony construction in case of resettlement of the colony 2. Basic amenities at household level to be provided in case of resettlement 3. Few impacted by land & structure both will be counted twice in case of resettlement 4. Direct road access for security 5. Income Restoration program in case of resettlement 6. Grievance redressal cell will be established in case of resettlement 7. No separate houses for one family if residing in one house 8. Encouragement towards education	**High**

Project Stakeholder				
Consultations	**Stakeholders**	**Concerns and Issues**	**Mitigation Measures proposed / Reason for not being able to address the concern**	**Influence (H=High, M=Medium, L=Low)**
		be paid		
Primary School & Anaganwadi	Physical displacement impacted	1. Structure loss 2. Bigger area & amenities to be provided 3. Willingness to give the land 4. Education in the village to be encouraged	1. School & Anganwadi will be rebuilt 2. Basic Amenities to be provided 3. Provisions for encouragement of education during consultations	**High**
Routhsarmala, Kothapalem, Gowadmala, B.S.Puram Villages	Economically Affected	1. Direct & Indirect Land losers 2. Vulnerable- Women Headed Household, Houses with especially abled persons and old age persons, BPL, SC, ST social categories 3. Employment options are very few 4. Assurance of employment in the development 5. Survey numbers not included 6. Polluted industries not to be around the residential areas 7. Amenities required such as ration shop, hospital	1. Compensation will be paid appropriately as per the legal polices 2. No employment assurance 3. Income restoration programs will be established 4. Land loser falling in socially Vulnerable category will be given provisions as specified in the rules and regulations 5. Plan will be developed with the necessary requisites 6. Basic amenities will be provided as per the polices, rules and regulations	**High**

5. Public Hearing

1. A public consultation has been conducted at South Block at Srikalahasthi Node in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh was conducted on 24 July 2020 by APPCB. The consultations were held at the project site at Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram Revenue Villages of Thottambedu and B.N. Kandriga Mandals, Chittoor district, Andhra Pradesh. The public consultation has been conducted as per EIA notification 2006, issued by MOEFCC. The proposed APIIC industrial park comes under Scheduled Category A – 7 (C). the terms of reference dated 04.12.2019 was issued to APIIC. APIIC has conducted EIA of the proposed project with corridor of impact within 10 kms of radius. Minutes of Public hearing and consultations are provided as **Appendix 5**.

Table 33: Public Hearing – Comments and Responses

S. No	Name and Place of Speaker	Public View or Comments	Response of APIIC
1	Sri S. Rajendranadh Reddy, Resident of Routhusurumala (V)	He welcomed the project and borught the following to the notice of the public hearing panel. 1. He requested the authority to establish the greener and MSME	Green belt and open spaces (green areas) will be developed in an area of 387.59 ac. (156.85 ha) (13.99%). In addition to this,

S. No	Name and Place of Speaker	Public View or Comments	Response of APIIC
		industries at the proposed industrial park. 2. He requested the authorities to develop more green belt area adjacent to the existing villages and further requested not to establish any industry adjacent to the villages. 3. Requested not to establish RED category industries adjacent to the villages. 4. Requested to establish a high school at his village and also requested to establish Rural Skill Development centre to train the unemployed youth. 5. Requested to establish primary health centre in co-ordination with DMHO, Chittoor for beneficiary of the surrounding villagers for treating seasonal diseases viz, Malaria, Dengue, Etc. 6. He also requested to establish micro food processing industries for beneficiary of surrounding villages to create employment for women living in the surrounding villages.	individual industries shall develop green belt around their industrial plot as per APPCB guidelines. Approximately, 15 m wide peripheral green buffer is provided along the boundary. 2m buffer is provided if the width of the canal is less than 10m. MSME industries (includes Leather, Plastics, wood etc.,) are proposed in an area of around ~171.96 acres and will provide the good opportunity for entry level entrepreneurs. Proposed developments are carried out based on the concept of zoning. As suggested by MOEFCC, no red category industry will be established within 300 m of settlement and zoning plan of proposed industries is given in Figure FD0203. As per CER OM dated May 01, 2018, proposed project is a Greenfield project and INR 6.35 Crores were allotted for CER activities. Identified CER Activities are Female Literacy Higher Education at Secondary School level, Enhancing the School, High School and Collage Lab and Library Development, Employment enhancing skill development training. It is likely to generate employment of 51215 nos and local people will get the preference in employment based on skill sets. Skill development training will be developed to provide training for the local people which enables them for eligibility in employment
2	Sri Kanta Reddy, Resident of Tallapudi (V)	While speaking on occasion welcomed the proposed project and brought to the notice on the committee on cancellation of DKT pattas issued by the Government. He further requested the authorities to provide more job opportunities to the surrounding villages.	Land related aspects shall be dealt by District administration and revenue department It is likely to generate employment of 51215 nos and local people will get the preference in employment based on skill sets. Skill development training will be developed to provide training

S. No	Name and Place of Speaker	Public View or Comments	Response of APIIC
			for the local people which enables them for eligibility in employment
3	Sri V.Ramaiah, Resident of Routhusurumala (V)	While speaking on occasion, expressed his unhappy on non-providing of job opportunities to the local peoples at the existing industries. He further requested to provide good number of job opportunities in the upcoming industrial park.	It is likely to generate employment of 51215 nos and local people will get the preference in employment based on skill sets. Skill development training will be developed to provide training for the local people which enables them for eligibility in employment
4	Sri K.Venkatesulu, Resident of Alathuru (V)	While speaking on occasion, Requested the committee to consider the concerns of his village also along with other villages on the benefits availing due to the establishment of industrial park.	Socio-economic survey was undertaken covering the impacted households. The detailed outcomes during the primary socio-economic survey conducted among the project (land) affected households and Sastriyanadhi centre were considered and suitably incorporated for addressing the same in proposed CER and CSR activities.
5	Sri C.Subramanyam, Resident of Gowdamala (V)	While speaking on occasion, Requested the committee to sort out the technical issues involved in the land alienation and corresponding payments shall be made to the land losers.	Land related aspects shall be dealt with District administration and revenue department

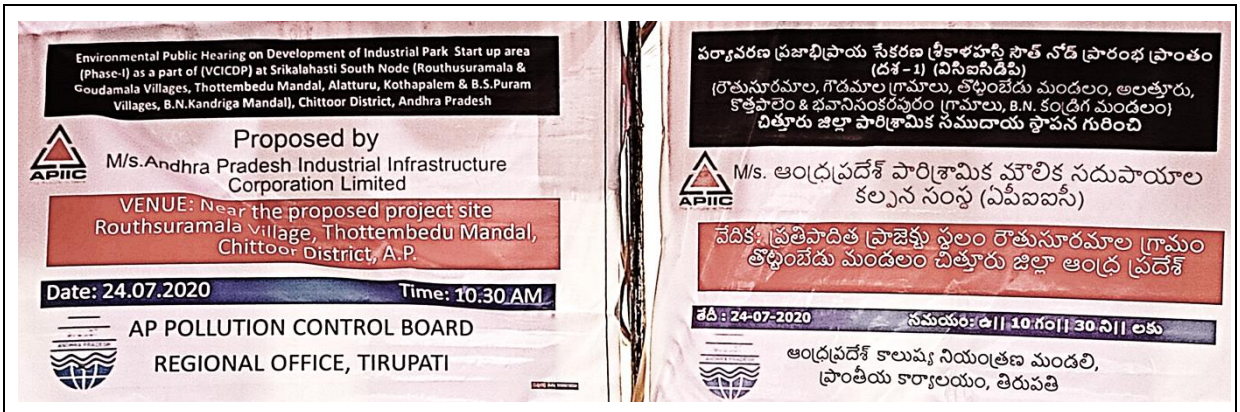


Exhibit 19: Public Consultation Meeting On 24 July2020

VIII. GRIEVANCE REDRESS MECHANISM (GRM)

233. **Project grievance redress mechanism**. A project-specific, three-tier GRM covers both environment and social issues. The GRM has been established to receive, evaluate, and facilitate the resolution of affected persons' concerns, complaints, and grievances about the social and environmental performance at project level. The GRM aims to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns related to the project. Assessment of the GRM designed and implemented for Project 1 shows that the system was effective in timely resolution of grievances in a transparent manner.[17] The GRM will be disclosed to the affected communities and households prior to the mobilization of contractors in any subproject areas. The project GRC, supported by the PMSC consultants as well as the PMU and PIU safeguard officers will be responsible for timely grievance redress on environmental and social safeguards issues and responsible for registration of grievances, related disclosure, and communication with the aggrieved party. A complaint register will be maintained at field unit, PIU, and PMU levels with details of complaint lodged, date of personal hearing, action taken and date of communication sent to complainant. Contact details, procedures and complaint mechanism will be disclosed to the project affected communities at accessible locations and through various media (i.e., leaflets, newspapers, etc.). Samples of draft project leaflets, grievance registration forms and monitoring templates are in the resettlement framework.

(i) **1st Level grievance.** The phone number of the PIU office should be made available at the construction site signboards. The contractors and field unit staff can immediately resolve onsite, seek the advice of the PIU safeguard manager (social safeguards and communications/environment safeguards) as required, within seven days of receipt of a complaint/grievance.

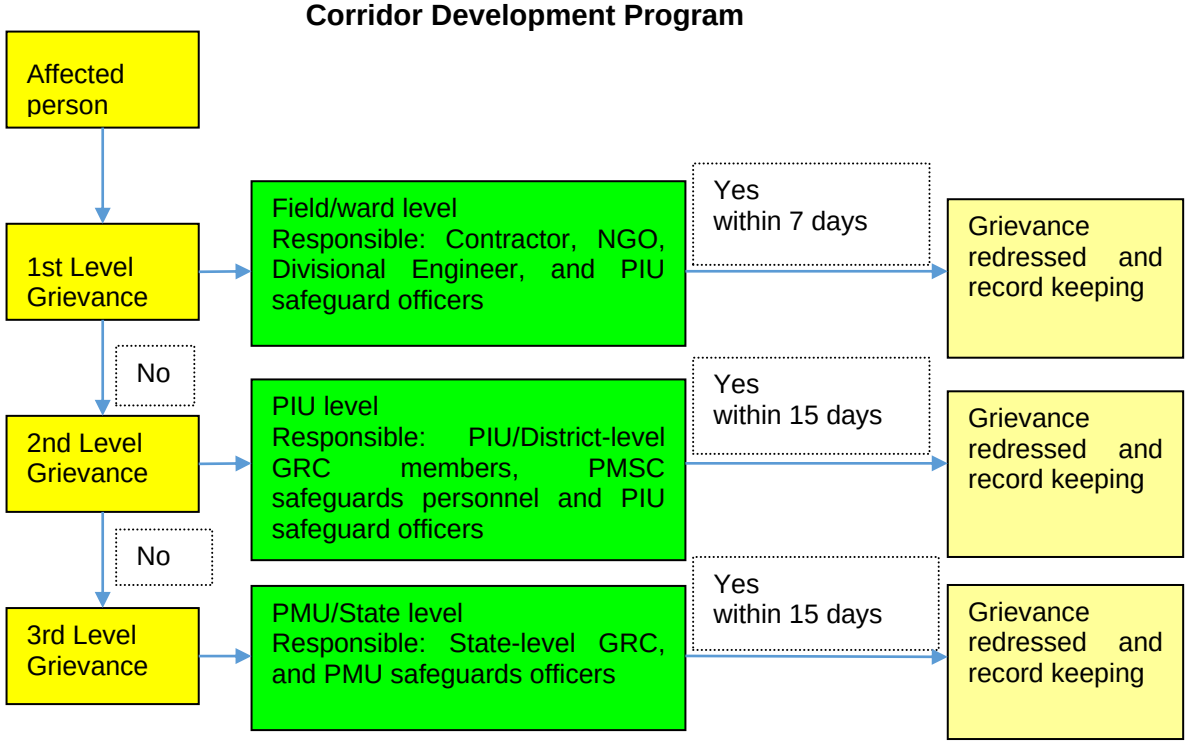
(ii) **2nd level grievance.** All grievances that cannot be redressed within 7 days at field/ward level will be reviewed by the GRC at district level headed by Joint Collector. GRC will attempt to resolve them within 15 days. The PIU safeguard manager (social safeguards and communications/ environment safeguards) will be responsible to see through the process of redressal of each grievance.

(iii) **3rd Level Grievance.** All grievances that cannot be redressed within 15 days at district level will be reviewed by the GRC at state level headed by the project director, PMU with support from district GRC, PMU officer - social safeguard and communications/officer-environmental safeguards, and PMC environment and social safeguards specialists. GRC will attempt to resolve them within 15 days. The PMU officer - social safeguard and communications will be responsible to see through the process of redressal of each grievance pertaining to social safeguards.

234. The multi-tier GRM for the project is outlined below (Figure 25), each tier having time-bound schedules and with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required. The GRC will continue to function throughout the project duration.

[17] Regular recording and resolution of grievances at field level indicates that the GRM structure is working effectively. No major grievance was received for project 1 and the GRM helped smoothen the process of project implementation. Hence the proposed architecture for the project 2 of VCICDP GRM remains similar, with some refinement and strengthening for the industrial startup areas, through (a) provision of help desks at each startup area which would serve as accessible platforms for grievance registration for local communities and (b) ensuring indigenous peoples' representation in the GRM structure at district level, for Chittoor–South startup area.

Figure 25: Grievance Redress Mechanism – Visakhapatnam–Chennai Industrial Corridor Development Program



GRC = grievance redressal committee, PIU = project implementation unit, PMU = project management unit, PMSC = project management and supervision consultant.

A. Grievance Redressal Committee

235. GRC consists of two-levels, one at district level and another at state/PMU level, to receive, evaluate and facilitate the resolution of displaced persons concerns, complaints and grievances. GRC at district level will receive, evaluate, and facilitate the resolution of displaced persons concerns, complaints, and grievances. The GRC will provide an opportunity to the affected persons to have their grievances redressed prior to approaching the State level LARR Authority, constituted by GOAP in accordance with Section 51(1) of the RFCTLARR Act, 2013. The GRC is aimed to provide a trusted way to voice and resolve concerns linked to the project, and to be an effective way to address displaced person's concerns without allowing it to escalate resulting in delays in project implementation. In case of any indigenous peoples impacts in subprojects, the GRC (at district level) must have representation of the affected indigenous people community, the chief of the tribe or a member of the tribal council as traditional arbitrator (to ensure that traditional grievance redress systems are integrated) or an independent indigenous peoples expert or an NGO working with indigenous people groups. GRC will also ensure that grievance mechanism established is gender inclusive in receiving and facilitating resolution of the IPs' concerns.

236. The GRC will continue to function, for the benefit of the displaced persons, during the entire life of the project including the defects liability period. The entire resettlement component of the project has to be completed before the construction starts, and pending grievances resolved. Other than disputes relating to ownership rights and apportionment issues on which the LARR Authority has jurisdiction, GRC will review grievances involving all resettlement benefits, relocation, and payment of assistances. The GRCs will function out of each district where the subprojects are being implemented. The existing setup for coordination, monitoring, and grievance redress at district level which meets once a month,

will be used for Project 2 of VCICDP. The GRC chaired by Joint Collector, will comprise of the Divisional/Project Engineer acting as its member secretary and the following members: (i) Revenue Divisional Officer/Sub- Collector of the division; (ii) project director, District Rural Development Agency; (iii) Chief Executive Officer, Zilla Parishad; (iv) District Panchayat Officer; (v) District Education Officer; (vi) District Medical and Health Officer; (vii) District Level representative of power distribution companies; and (viii) Superintendent, Rural Water Supply Panchayat Raj Department, three members from affected persons (with at least one being a woman affected person), team leader of the implementing consulting agency/NGO. The contact details of the GRC, PIUs safeguards manager, and the resettlement plan implementation NGO/agency will be included in the brochures to be circulated among all affected people as a first step in resettlement plan implementation.

237. The project director, PMU will be the appellate authority who will be supported by the PMSC and Safeguard Officer (social safeguards and communications/ environment safeguards) of PMU and concerned PIUs to make final decisions on the unresolved issues. Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

238. **Accountability Mechanism.** In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer at ADB headquarters or the ADB India Resident Mission. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.18

239. **Record-keeping.** Each of the PIUs of each town/city will keep records of grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions, and the date these were affected and final outcome. The number of grievances recorded and resolved, and the outcomes will be displayed/disclosed in the PMU office, PIU offices, and on the web, as well as reported in monitoring reports submitted to ADB on a semi-annual basis. The sample grievance registration format is attached as Appendix 16.

240. Periodic review and documentation of lessons learned. The PMU Officer (social safeguard and communications/environmental safeguards) will periodically review the functioning of the GRM in each nodes and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.

241. Costs. Costs involved in resolving the complaints (meetings, consultations, communication, and reporting/information dissemination) will be borne by the concerned PIU at town level while costs related to escalated grievances will be met by the PMU. Cost estimates for grievance redress are included in resettlement cost estimates.

242. **Capacity building.** Regular capacity building activities on social safeguards are proposed, including quarterly training for safeguards officers of PIUs in year 1, followed by semiannual training in years 2 and 3 of project implementation, and semiannual training for

[18] ADB. Accountability Mechanism.

at least 40 staff of PMU, PIUs, and resettlement NGO in the first 3 years of project implementation. Capacity building training will be undertaken by PMSC social safeguards coordinator on safeguards issues of the projects, resettlement framework of VCICDP and ADB Safeguards Policy. The PIU safeguards managers will be further supported by the PMSC experts through on the job training for resettlement plan updating, implementation, complaint resolution and report writing on safeguards.

243. **Civil works contracts.** The PIUs will ensure that bidding and contract documents include specific provisions requiring contractors to comply with all (i) applicable labor laws and core labor standards on prohibition of child labor as defined in national legislation for construction and maintenance activities, on equal pay for equal work of equal value regardless of gender, ethnicity or caste, on elimination of forced or bonded labor; and (ii) the requirement to disseminate information on infectious diseases such as coronavirus disease and sexually transmitted diseases including HIV/AIDS to employees and local communities surrounding the project sites. Relevant provisions of the GESI AP will be shared with the contractors' responsibilities by the PMU and PIUs. Contractors will carry out all environmental and social mitigation and monitoring measures outlined in their contract and will maintain grievance registers and place GRM signboards at work sites. PMSC specialists will assist the PMU and PIUs in monitoring contractor's compliance activities.

244. **Prohibited investment activities.** Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009).

IX. ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

A. Environment Management Plan

245. **The main objectives of Environmental Management are to:**

(i) To ensure compliance with Asian Development Bank's applicable safeguard policies, and regulatory requirements of Andhra Pradesh and the Government of India;
(ii) To formulate avoidance, mitigation and compensation measures for anticipated adverse environmental impacts during construction and maintenance and ensure that environmentally sound, sustainable and good practices are adopted
(iii) Provide guidelines for appropriate mitigation measures
(iv) Establish systems and procedures for implementing mitigation measures
(v) Ensure the mitigation measures are being implemented
(vi) Monitor the effectiveness of mitigation measures
(vii) Institutional framework includes the responsibilities for environment management as well as responsibility for implementing environmental measures
(viii) Take necessary prompt action when unforeseen impacts occur

1. Institutional Mechanism for Implementation of Mitigation Measures

246. The effective implementation and close supervision of the environmental management to mitigate the environmental impacts, which are likely to arise due to the construction and operational phases of the Industrial area could be achieved through a suitable institutional mechanism. A proper institutional mechanism to understand and implement appropriate environmental management measures during various stages of the project is a pre- requisite and has a strong bearing for the overall success of the project management. Implementation of the Environmental Management measures shall become

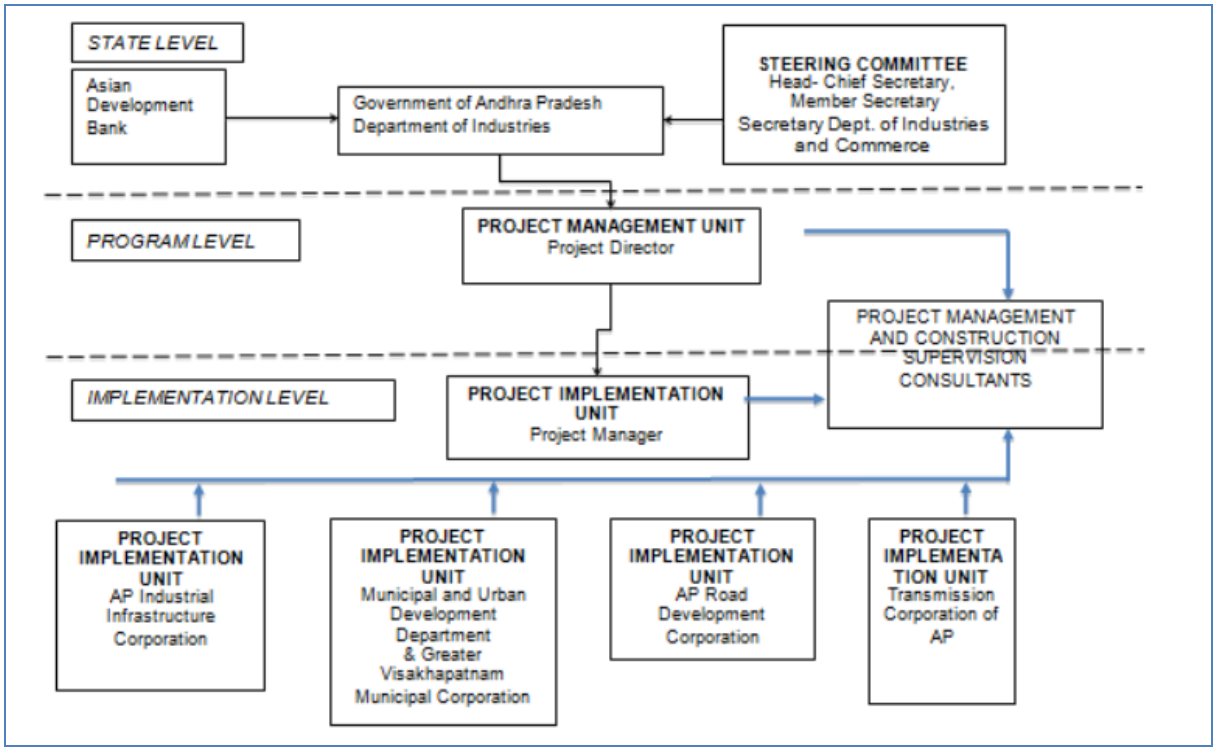
easy once an environmentally responsible Team with institutional arrangement and responsibilities are in place.

247. DOI is the executing agency. A PMU is established within the Directorate of Industries, which is under the DOI, for planning, implementation, monitoring and supervision, and coordination for both the PBL and MFF. PIUs, established in APIIC, APRDC, GVMC, and APTransco, will be responsible for implementing the MFF. PMU has recruited PMSC to provide support in implementation of VCICDP.

248. PMU will support PIUs in implementation, management and monitoring of the project. PMU and PIUs will be assisted by PMSC respectively. PIUs will appoint construction contractors to build infrastructure. Once the infrastructure is built and commissioned, the PIUs will operate and maintain the infrastructure. At state-level a Project Steering Committee (PSC) will be established to provide overall policy direction for the implementation of VCICDP.

249. PMU will support APIIC in implementation, management and monitoring of the project. PMU and APIIC will be assisted by PMSC respectively. APIIC will appoint construction contractors to build infrastructure. Once the infrastructure is built and commissioned, the APIIC will operate and maintain the infrastructure. At state-level a Project Steering Committee (PSC) will be established to provide overall policy direction for the implementation of VCICDP.

Figure 26: APIIC subproject under VCICDP - Implementation Arrangements



250. The GOAP will ensure that all the requirements prescribed in Schedule 5 of the framework financing agreement, and the following frameworks that have been prepared with respect to the Facility are complied with during the processing and implementation of VCICDP: (i) environmental assessment and review framework (EARF), (ii) resettlement framework, and (iii) indigenous peoples planning framework (IPPF).

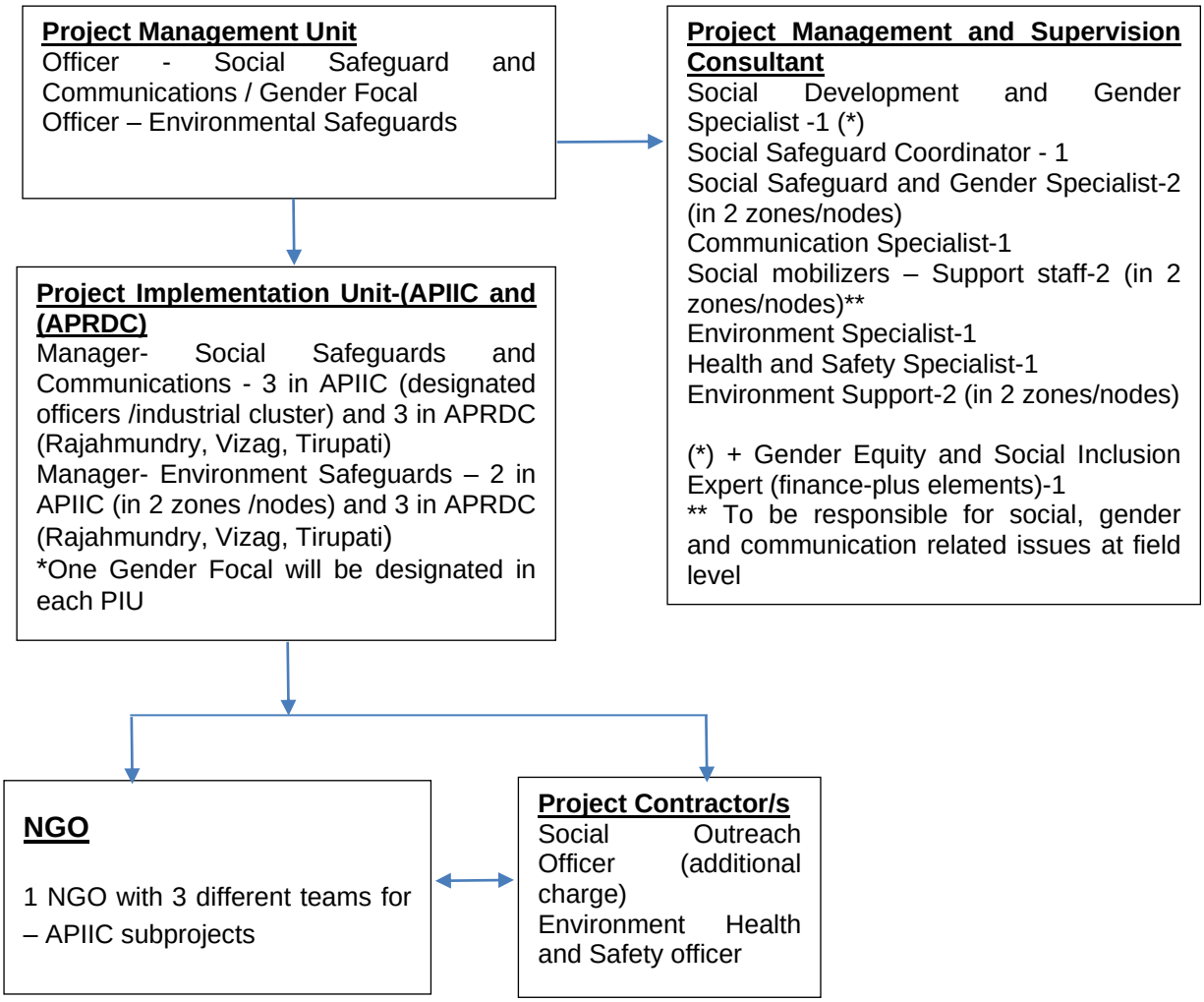
251. The safeguard frameworks cover the Facility specific information and requirements in accordance with ADB's Safeguard Policy Statement, 2009: (i) the general anticipated

impacts of subprojects likely to be financed under the Facility on the environment, involuntary resettlement, and indigenous peoples; (ii) the safeguard criteria that are to be used in selecting projects; (iii) the requirements and procedure that will be followed for screening and categorization, impact assessments, development of management plans, public consultation and information disclosure , and monitoring and reporting; (iv) the institutional arrangements (including budget and capacity requirements) and government's and ADB's responsibilities and authorities for the preparation, review and clearance of safeguard documents.

252. The applicability and relevance of each safeguard framework for Tranche 2 has been reviewed and updated to ensure relevance and consistency with all applicable laws and regulations in India and Safeguard Policy Statement, 2009 as amended from time to time. In the event that there is a discrepancy between the laws and regulations of India and ADB safeguard policies, the ADB safeguard policies will prevail. In addition, Government of India will carry out due diligence works on ongoing projects to assess the status of compliance with the safeguards-related plans and frameworks. For each project, GOAP is required to submit safeguard monitoring reports semiannually covering all the aspects and issues from perspectives of environment, land acquisition, and resettlement and indigenous people.

253. All executing and implementing agencies will ensure that VCICDP is implemented with active participation of all stakeholders, using participatory practices, and consultation will continue throughout implementation of the Investment Program. Disclosure of relevant information to these stakeholders will continue throughout implementation of the Investment Program. Safeguards will be the responsibility of the PMU and the respective PIUs. The PMU and PIUs will be supported by experts as part of the PMSC and resettlement plan implementation nongovernment organizations (NGOs). The safeguards implementation organogram is provided in Figure 27.

Figure 27: Safeguards Organogram – Visakhapatnam–Chennai Industrial Corridor Development Program



APIIC = Andhra Pradesh Industrial Infrastructure Corporation, APRDC = Andhra Pradesh Road Development Corporation, NGO = nongovernment organization.

2. Safeguard Implementation Arrangement

254. **Safeguards Implementation Arrangements**. The implementation arrangements put in place for the MFF, and Project 1 will continue for Project 2. Program management unit (PMU) established within Directorate of Industries by DOIC (EA), is responsible for planning, implementation, monitoring and supervision, and coordination of MFF. PMU is supported by Project implementation units (PIUs) established in Andhra Pradesh Industrial Infrastructure Corporation (APIIC) and Andhra Pradesh Road Development Corporation (APRDC), which will respectively implement industrial infrastructure and road sector subprojects under Project 2. PMU and PIUs are supported by a Project Management and Supervision Consultant (PMSC). Described below are the institutional roles and responsibilities of PMU and PIUs /APIIC to ensure environmental safeguards are implemented and complied with during design, construction, and operation phases. PMU is staffed with an environmental safeguards officer to oversee and ensure environmental safeguards compliance. APIIC has environmental safeguards managers (one in each zone/node) to oversee the day-to- day implementation of SEMPs by the contractors and ensure safeguards compliance. PMSC team with an environment specialist and a health and safety specialist based in PMU and supported by two field-based environmental engineers one in each Nodes[19] will assist APIIC

[19] The environmental engineers may be based at Vizag and Chittore /Vijaywada supporting the subprojects in two ends of the VCIC corridor.

and PMU in implementation, monitoring and reporting on environmental safeguards. Contractors will be responsible for implementing the mitigating measures during the design/construction phase, and APIIC and PMU will be responsible for monitoring.

255. **Program Management Unit (PMU). K**ey tasks and responsibilities of the PMU environmental safeguards officer with the support of PMSC are asfollows:

(i) confirm existing IEEs/EMPs are updated based on detailed designs and that new IEEs/EMPs are prepared in accordance with the EARF and subproject selection criteria related to safeguards;
(ii) confirm whether IEEs/EMPs are included in bidding documents and civil works contracts;
(iii) provide oversight on environmental management aspects of subprojects;
(iv) ensure SEMPs prepared by contractors are cleared by PIUs prior to commencement of civil works;
(v) establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the SEMPs;
(vi) facilitate and confirm overall compliance with all Government rules and regulations regarding site and environmental clearances as well as any other environmental requirements as relevant;
(vii) Oversee and ensure compliance with labour regulations and ADB SPS prohibited list by contractors and their subcontractors and suppliers etc..
(viii) supervise and provide guidance to the PIUs to properly carry out the environmental monitoring and assessments as per the EARF;
(ix) review, monitor and evaluate the effectiveness with which the SEMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
(x) consolidate monthly environmental monitoring reports from PIUs and submit semi-annual monitoring reports to ADB;
(xi) ensure timely disclosure of final IEEs/SEMPs in locations and in a form and language accessible to the public and local communities; and
(xii) address any grievances brought about through the Grievance Redress Mechanism (GRM) in a timely manner.

256. **Project Implementation Units.** In APRDC Head Office, the safeguards managers of APRDC currently working on a World Bank Project will coordinate all environmental and social aspects of the projects. In AP Transco, given the isolated locations of the proposed sub projects, the subprojects are under different Superintending Engineers and will implement the subprojects through respective circle offices and a special projects cell. The respective Senior Engineers will be deputed/designated as safeguard compliance officers covering both environment and social safeguards. In APIIC, the Senior Engineer will be deputed/designated as safeguard compliance managers in addition to the environmental engineer. In GVMC, the Deputy Engineer will be deputed/designated as safeguard compliance officer in addition to the environmental engineer.

Table 34: PIU Environmental Safeguard Manager Tasks and Responsibilities

PIU Environmental Safeguard Manager	Tasks and Responsibilities
Environmental Safeguards –APRDC	(i) include IEEs/EMPs in bidding documents and civil works contracts; (ii) review and approve SEMPs prepared by contractors;

PIU Environmental Safeguard Manager	Tasks and Responsibilities
	(iii) oversee day-to-day implementation of SEMPs by contractors including compliance with all government rules and regulations; (iv) take necessary action for obtaining rights of way; (v) oversee environmental monitoring by contractors; (vi) Ensure that workers are paid and treated according to the labour legislations and ADB's SPS prohibited list requirements (vii) take corrective actions when necessary;

PIU Environmental Safeguard Manager	Tasks and Responsibilities
	(i) submit monthly environmental monitoring reports to PMU; (ii) conduct continuous public outreach and awareness building related to environmental management; (iii) address grievances brought about through the GRM in a timely manner; and (iv) organize an induction course for the training of contractors in (v) environmental management to be delivered by PMSC consultants
Senior Engineer Cum Compliance Officer (DE Level) – APTransco	(i) Ensure complete payment and other resettlement assistants provided to the affected people prior to displacements (physical and economical) and starts of civil works in the affected areas; (ii) Coordinate with Safeguard Manager of PMU and ensure all social/environmental requirements if any are met.
Senior Engineer Cum Compliance Officer – APIIC	Coordinate with Safeguard Manager and ensure all social/environmental requirements are met.
Environmental Engineer - APIIC (not exclusive to this project)	(i) include IEEs/EMPs in bidding documents and civil works contracts; (ii) review and approve SEMPs prepared by contractors; oversee day-to-day implementation of SEMPs by contractors including compliance with all government rules and regulations; (iv) take necessary action for obtaining rights of way; (v) oversee environmental monitoring by contractors; (vi) Ensure that workers are paid and treated according to the labour legislations and ADB's SPS prohibited list requirements (vii) take corrective actions when necessary; (viii) submit monthly environmental monitoring reports to PMU; conduct continuous public outreach and awareness building related to environmental management; (x) address grievances brought about through the GRM in a timely manner; and (xi) organize an induction course for the training of contractors in environmental management to be delivered by PMSC consultants.
Deputy Engineer Cum Compliance Officer - GVMC	(i) Coordinate with Safeguard Manager and ensure all social/environmental requirements are met.

Environmental Engineer - GVMC	(i) include IEEs/EMPs in bidding documents and civil works contracts; (ii) review and approve SEMPs prepared by contractors; oversee day-to-day implementation of SEMPs by contractors including compliance with all government rules and regulations; (iv) take necessary action for obtaining rights of way; (v) oversee environmental monitoring by contractors; (vi) take corrective actions when necessary; (vii) submit monthly environmental monitoring reports to PMU; conduct continuous public outreach and awareness building related to environmental management; address grievances brought about through the GRM in a timely manner; and (x) organize an induction course for the training of contractors in environmental management to be delivered by PMSC consultants

257. **Project Management and Supervision Consultants.** The PMU and PIUs will be assisted by PMSC which will be staffed with environmental, health and safety and social safeguard specialists to provide required assistance and regular progress report on safeguards implementation. The environmental specialist will have overall responsibility in implementation of environmental safeguards, including appropriate monitoring and reporting responsibilities. The PMSC environment specialist will provide support for both Project 1 and Project 2 subprojects. Key tasks and responsibilities of the PSMC environmental specialist is as follows:

(i) Update the EARF as required;
(ii) Update the IEEs including site- and subproject-specific EMPs for VCICDP subprojects; Prepare the IEEs and EMPs for subproject components;
(iii) Supervise EMP implementation;
(iv) Prepare a monitoring report of final site- and subproject-specific EMPs and communicate with the stakeholders, including ADB on the progress, of the subprojects including environmental safeguards compliance;
(v) Prepare semi-annual environmental safeguards compliance reports; and
(vi) Support the implementing agencies in preparing periodic financing requests andnecessary environmental safeguard reports for subsequent tranches.
(vii) Establish a system to monitor environmental safeguards of the Project; prepareindicators for monitoring important parameters of safeguards;
(viii) Ensure all requisite approvals and no objection certificates are in place to allow implementation, and that these are renewed in a timely manner where required;
(ix) Ensure that provisions and conditions of all necessary permits, consents, NOCs,etc., are incorporated in the IEEs;
(x) Take proactive action to anticipate the potential environmental impacts of theProject to avoid delays in implementation;
(xi) Assist PIUs in the establishment of GRC for IEE implementation;
(xii) Support the PIUs and PMU in the GRM implementation to address any grievances submitted in a timely manner and establish record keeping system forcomplaint and redressal status of the project;
(xiii) Assist the PIUs and PMU in the project GRM mechanism and complaint solution;
(xiv) Assist the PIUs and PMU for GRM record keeping for first tier complaint and redressed actions;
(xv) Ensure that the relevant environmental mitigation measures specified in the updated EMP will be incorporated into bidding documents and approved by the ADB prior to the issuance of the invitation for bidding;
(xvi) Closely monitor and supervise to ensure that all mitigation measures and

monitoring requirements set out in the EMP are implemented and complied with throughout the project implementation, and when required, prepare or recommend necessary corrective actions to be taken and monitor its implementation;

(xvii) Conduct regular monitoring and ensure that contractors and their subcontractors comply with labour legislations and ADB SPS Prohibited list requirements; ensure that workers are paid and treated according to the labor legislations

(xviii) Provide on-the-job training programs to PIU staff involved in Project implementation for strengthening their capacity in managing and monitoring environmental safeguards; and

(xix) Assist the PIUs' safeguards officer to sensitize the turnkey contractors on ADB SPS, EARF, and GRM during detailed design and civil works implementation.

258. **Civil works contracts and contractors.** IEEs including EMPs are to be included in bidding and contract documents and verified by the PIUs and PMU. The PMU and PIUs will ensure that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable laws and regulations relating to environment, health and safety; (ii) reinstate pathways, other local infrastructure, and agricultural land to at least to their pre-project condition upon the completion of construction; (iii) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation, international treaties for construction and maintenance activities;(b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; (c) no discrimination in respect of employment and occupation; (d) allow freedom of association and effectively recognize the right to collective bargaining, and (e) elimination of forced labor; and (iv) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites.

259. The contractor will be required to appoint a full-time Environment, Health and Safety (EHS) supervisor on-site to implement the EMP. Prior to start of construction, Contractor will be required to prepare and submit to PIU, for review and approval. a Site-specific EMP (SEMP). No works can commence until SEMP is approved by PIUPMU. Contractors will carry out all environmental mitigation and monitoring measures outlined in EMP, approved SEMP and their contracts. The contractor will be required to undertake day-to-day monitoring of the SEMP implementation and submit reports to the PIU on a monthly basis. A copy of the EMP/approved SEMP will always be kept on-site during the construction period. Non-compliance with, or any deviation from, the conditions set out in the EMP/SEMP constitutes a failure in compliance and will require corrective actions. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. Key responsibilities of the EHS supervisor are:

(i) Prepare SEMP and submit to PMU/PIU for approval prior to start of construction;

(ii) Ensure implementation of SEMP and report to PIU/PMSC on any new or unanticipated impacts; seek guidance from the PMU/PIU/PMSC to address the new or unanticipated impact in accordance with the EARF, and ADB SPS;

(iii) Ensure that necessary pre-construction and construction permits are obtained;

(iv) Conduct orientation and daily briefing sessions to workers on environment, health and safety;

(v) Ensure that appropriate worker facilities are provided at the workplace and labor camps as per the contractual provisions;

(vi) Carry out site inspections on a regular basis and prepare site-inspection checklists/reports;

(vii) Record EHS incidents and undertake remedial actions;
(viii) Conduct environmental monitoring (air, noise, etc.,) as per the monitoring plan
(ix) Prepare monthly EMP monitoring reports and submit to PIU;
(x) Comply with labour legislations, and ensure that subcontractors also implement labor legislations requirements, through cascading of requirements to subcontractors—HR policy, labor management requirements, any worksite specific grievance redress mechanism.
(xi) Work closely with PIU Safeguards Officer and PMDSC Environmental Engineer to ensure communities are aware of project-related impacts, mitigation measures, and GRM; and
(xii) Coordinate with the PIU and PMDSC on any grievances received and ensure that those are addressed in an effective and timely manner.

Table 35: Institutional Roles & Responsibility: Environmental Safeguards

Phase	PMU / PIUs	PMSC	ADB
Appraisal stage of all Subprojects under the investment program	PMU / PIUs to review the REA checklists and draft EIA/IEE. PMU / PIUs to submit draft EIA/IEE to ADB for review and approval. PMU / PIUs to disclose on its website the approved EIA/IEE. PMU / PIUs to ensure disclosure of information throughout the duration of the subproject.	PMSC to conduct REA for each subproject using checklists and to prepare EIA/IEE	ADB to review the REA checklists and reconfirm the categorization. ADB will review and approve EIA reports (Category A) and IEE reports (Category B) subprojects. ADB to disclose on its website the submitted EIA/IEE report.
Detailed Design Phase of all Subprojects under the investment program	PMU / PIUs with the assistance of PMSC to incorporate the EMP, environmental mitigation and monitoring measures into contract documents. PMU / PIUs to obtain all applicable consents/permits/clearances PMU to submit to ADB final IEE for approval and disclosure at ADB website.	PMSC to revise the IEE and EMP in accordance with detailed design changes if warranted. PMSC to ensure incorporation of EMP in bid documents and contracts. PMSC to prepare inventory of utilities to be affected by the subproject.	ADB will review and approve updated EIA reports (Category A) and IEE reports (Category B) subprojects. ADB to disclose on its website updated EIA/IEE report.

Phase	PMU / PIUs	PMSC	ADB
Pre-construction Phase of all Subprojects under the investment program	PMU / PIUs to conduct public consultation and disclosure during IEE process and comments will be reflected in the IEE report. PMU / PIU to monitor the disclosure and public consultation. PIU and PMSC to approve contractor‘s proposed locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes. PMU to submit to ADB in prescribed format semi-annual Environment Monitoring Report 6 months after Loan effective date.	PMSC to ensure statutory clearances and permits from government agencies/other entities are obtained prior to start of civil works. PMSC to ensure disclosure of information prior to start of civil works and throughout the duration of the construction period. PMSC to approve contractor‘s site-specific environmental plan (such as traffic management plan, waste management plan, locations for camp sites, storage areas, lay down areas, and other sites/plans specified in the EMP). PMSC to conduct	

Phase	PMU / PIUs	PMSC	ADB
		baseline environmental conditions and inventory of affected trees	
Construction Phase of all Subprojects under the investment program	PMU / PIUs will review 6-monthly monitoring and EMP implementation report including the status of Project compliance with statutory clearances and with relevant loan covenants and submit the 6-monthly report to ADB and seek permission to disclose the same in the investment program web site.	PMSC to monitor the implementation of mitigation measures by Contractor. PMSC to prepare monthly progress reports including a section on implementation of the mitigation measures (application of EMP and monitoring plan) PMSC (as per EMP) will conduct environmental quality monitoring during construction stage (ambient air and noise, and water quality). PMSC to prepare the six-monthly monitoring report on environment by focusing on the progress in implementation of the EMP and issues encountered and measures adopted, follow-up actions required, if any.	ADB to review the 6 monthly report, provide necessary advice if needed to the PMU and approve the same. ADB to disclose on its website environmental monitoring reports.
Pre-operation Phase (Commissioning and Defect Liability Period)	PMU / PIUs to review monitoring report of PMSC on post-construction activities by the contractors as specified in the EMP PMU / PIU to review applicable consents requirements submit 6-monthly environmental monitoring report until project completion	PMSC to apply for the CTOs prior to commissioning. PMSC to monitor and approve post-construction activities by the contractors as specified in the EMP. prepare 6-monthly environmental monitoring report until project completion	ADB to review the environmental monitoring reports and provide necessary advice if needed to the PMU and approve the same. ADB to disclose on its website environmental monitoring reports.
Operation Phase of all Subprojects under the investment program	PIUs to conduct monitoring, as specified in the environmental monitoring plan. APPCB to monitor the compliance of the standards regarding drinking water quality, ground water, ambient air, effluent quality from treatment plant, noise, as applicable. submit 6-monthly environmental monitoring report until project completion	PMSC to support PMU and PIUs for environmental monitoring and compliance management during O&M of the developed infrastructure in the start-up area.	ADB to review the environmental monitoring reports and provide necessary advice if needed to the PMU and approve the same. ADB to disclose on its website environmental monitoring reports.

Notes: APPCB = Andhra Pradesh State Pollution Control Board, PMSC = Project Management Consultants, CTE = Consent to Establish, CTO = Consent to Operate, PMSC = Design and Supervision Consultant, EIA = Environmental Impact Assessment, EMP = Environmental Management Plan, IEE = Initial Environmental

Examination, PMU = Project Management Unit; PIU = Project Implementation Unit; REA = Rapid EnvironmentalAssessment

260. The roles and responsibilities of Developer/IP authority and Member Industry coming up in the IP are brought out in Table 36 below. These roles and responsibilities can be shared by IP developer as a part of agreement with member industry and shall have clear terms on environmental management responsibilities.

Table 36: Roles and Responsibilities of APIIC and Member Industry

S No	Component	Responsibility of APIIC	Responsibility of Member
1	General Agreement	Evolve very specific plot allotment guidelines with proper Environmental impact mitigation clauses. Any violations need proper penal clauses with adequate notice. Multiple violations need to be taken seriously and need to be reported to concerned administrative authority.	Strictly adhere to the plot allotment guidelines and agreement. No pollutant beyond acceptable standard shall be released to Natural water systems that affect the common people of the region.
2	Water Supply	Required water for the member industries for process, cooling and domestic usage shall be supplied by developer. Groundwater shall not be withdrawn during operation stage of the project. Groundwater shall not be contaminated by discharge of pollutants into streams, ponds and other surface water bodies.	Water requirement shall be met from IP water supply scheme. Groundwater shall not be withdrawn during operation stage of the Project. Groundwater shall not be contaminated by discharge of pollutants into streams, ponds and other surface water bodies.
3	Rainwater harvesting	Rainwater harvesting pits/recharge wells shall be provided at identified locations as per development plan.	Rainwater harvesting in industry premises shall be adopted.
4	Waste management	Sludge generated from Industry industries shall have a temporary storage facility for 30 days, wastes shall be periodically disposed to nearby TSDF.	A temporary storage facility for 30 days detention which will be designed as per the requirement if needed. Wastes shall be periodically disposed to nearby TSDF and follow Solid waste management rules, 2016 covering municipal, hazardous and E-waste.
5	Post project environmental monitoring	EMC shall conduct post project environmental monitoring as per the environmental monitoring programme suggested for construction and operation phases. Specific requirement of monitoring shall be carried out as a part of compliance to EC/CFE/CFO.	Specific requirement of monitoring shall be carried out as a part of compliance to CFE/CFO.
9			
10	Greenbelt	Greenbelt development along	Greenbelt and green areas shall be

S No	Component	Responsibility of APIIC	Responsibility of Member
	development	IP boundary and green areas in common areas and open spaces shall be developed.	developed in the industry level as per APPCB norms.

X. INSTITUTIONAL CAPACITY AND DEVELOPMENT

261. The PMSC environmental safeguards specialist will be responsible for training PMU and APIIC on environmental awareness and management in accordance with both ADB and government requirements. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project, along with the frequency of sessions, is presented in Table 37.

Table 37: Training Program for Environmental Management

Description	Contents	Schedule	Participants
Pre-construction stage			
Orientation workshop	Module 1 – Orientation ADB Safeguard Policy Statement Government of India Environmental Laws and Regulations	1/2 day (at Visakhapatnam) (50 persons)	PMU, and APIIC's officials involved in project implementation
Description	**Contents**	**Schedule**	**Participants**
	Module 2 – Environmental Assessment Process ADB environmental process, identification of impacts and mitigation measures, formulation of an environmental management plan (EMP), implementation, and monitoring requirements - Review of environmental assessment report to comply with ADB requirements Incorporation of EMP into the project design and contracts	1/2 day (at Visakhapatnam) (50 persons)	PMU, and APIIC's officials involved in project implementation.
Construction stage			
Orientation program/ workshop for contractors and supervisory staff	- Roles and responsibilities of officials/contractors/consultants towards protection of environment - Environmental issues during construction Implementation of EMP - Monitoring of EMP implementation Reporting requirements	1 day (at Subproject locations) (15 persons)	PMU APIICs Contractors

Description	Contents	Schedule	Participants
Experiences and best practices sharing	Experiences on EMP implementation – issues and challenges Best practices followed	1 day on a regular period to be determined by PMU, APIICs, and PMSC (at Visakhapatnam / Rambilli) (50 persons)	PMU APIICs Contractors

ADB = Asian Development Bank; EMP = Environmental Management Plan; APIIC = Project Implementation Unit; PMU = Project Management Unit; PMSC = Design and Supervision Consultant

XI. ENVIRONMENTAL MANAGEMENT PLAN, MONTORING PLAN

A. Environmental Management Plan

262. The following Table 38 show the potential environmental impacts, proposed mitigation measures and responsible parties.

263. The purpose of the environmental management plan (EMP) is to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of: (i) providing a proactive, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.

264. The contractor will be required to submit to the project implementing unit (PIU) the site-specific environmental management plan (SEMP) prior to start of works to ensure site-specific conditions and mitigation measures are appropriate, practical and applicable. The SEMP will include (i) mitigation measures in line with the EMP included in this IEE including; (ii) contractor's roles and responsibilities in obtaining statutory clearances, stakeholders engagement, consultations, and grievance redressal; (iii) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (iv) monitoring program as per SEMP; and (v) budget for SEMP implementation. PIU will review the SEMP, supervise its implementation, and advise contractors on any corrective actions, if required. A copy of the approved SEMP will be kept on-site and available to stakeholders at all times.

265. For civil works, the contractor will be required to (i) establish an operational system for managing environmental impacts (ii) carry out all of the monitoring and mitigation measures set forth in the SEMP; and (iii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE and EMP. The contractor shall allocate a budget for compliance with these EMP measures, requirements and actions.

1. Monitoring and Reporting

266. COI will monitor and measure the progress of EMP implementation. The monitoring activities will correspond with the project's risks and impacts. In addition to recording information on the work and deviation of work components from original scope, PMU, PIUs, and PMSC will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome.

267. APIIC / PMSC will submit monthly monitoring and implementation reports to PMU, who will take follow-up actions, if necessary. DOI will submit semi-annual monitoring reports

to ADB. The suggested monitoring report format and a construction site checklist are attached in Appendices, which is to be filled by the PMSC/APIIC supervising staff and attached to monthly reports. Subproject budgets will reflect the costs of monitoring and reporting requirements. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis. Monitoring reports will be posted in a location accessible to the public.

2. Compliance with loan covenants will be screened by the Department of Industries, Government of Andhra Pradesh.

268. ADB will review project performance against the DOI, GoAP, commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

(i) Conduct periodic site visits for projects with adverse environmental or social impacts;
(ii) Conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
(iii) Review the periodic monitoring reports submitted by EAs to ensure that adverse impacts and risks are mitigated, as planned and agreed with ADB;
(iv) Work with EAs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance as appropriate; and
(v) Prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

3. Proposed Activities, Associated Impacts and Mitigation Measures

269. Various project activities associated impacts during construction/operation phases and mitigation measures are summarised below.

Table 38: Proposed Activities, Associated Impacts and Mitigation Measures

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
Pre-Construction Phase							
Design of the Proposed Components.	Technical design of all the elements of water supply (WTP, reservoirs, and distribution system etc.), roads and drains, and power distribution, etc., follows the relevant national planning and design guidelines such as Central Public Health and Environmental Engineering Organization (CPHEEO) manuals, Indian Road Congress (IRC) standards, and applicable power distribution system planning, security and operating standards.	Documents like technical designs, standards, manuals, references, etc.	All project site	Contractor	Document Checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Necessary Statutory approvals (environment clearance, consent to establish, etc.) for environment management, building construction, water supply, fire safety, tree cutting, etc.	(i) obtain clearances; necessary planning and coordination with concerned authorities. (ii) Prior notice to and consultation with concerned authority, public to be affected so as to ensure that work does not get affected.	Documents like permits, licenses and its conditions	All project sites	Contractor	Document Checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
Contractor Preparatory Works	(iii) Prior to construction, the contractors / APIIC will hire authorized environmental monitoring agency for any baseline monitoring in accordance with the EMP monitoring plan	Environmental monitoring plan for baseline	All project sites	Contractor	Document Checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Construction of labour camps, stockpile areas, storage areas, and disposal areas may potentially cause conflicts with the local community, disruption to traffic flow and sensitive receptor	(i) No construction facility or camp site shall be located within 1 km of sastri yanadi Colony situated within the start up area. (i) Prioritize areas within or nearest possible vacant space in the project location; if it is deemed necessary to locate elsewhere, consider sites that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems; (iii) Do not consider residential areas; (iv) Take extreme care in selecting sites to avoid direct disposal to water	(i) List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas. (ii) Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land	Project facilities	Contractor	Document Checking and site visits	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	body which will inconvenience the community. (v) For excess spoil disposal, ensure (a) site shall be selected preferably from barren, infertile lands. In case agricultural land needs to be selected, written consent from landowners (not lessees) will be obtained; (b) debris disposal site shall be at least 200 m away from surface water bodies; (c) no residential areas shall be located within 50 m downwind side of the site; and (d) site is minimum 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies.						
Sources of Materials, Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and	(i) Prioritize sites already permitted by the Department of Mines and Geology (ii) If other sites are necessary, inform construction contractor that it is their	(i) List of approved quarry sites and sources of materials; (ii) Bid document to include requirement for	Quarry sites and borrow areas	Contractor	Document Checking and site visits	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
waterlogging, and water pollution.	responsibility to verify the suitability of all material sources and to obtain the approval of PIU and (iii) If additional quarries will be required after construction is started, inform construction contractor to obtain a written approval from PIU. Contractor to obtain all necessary permit, including environmental clearance	verification of suitability of sources and permit for additional quarry sites if necessary.					
Social and Cultural Resources Ground disturbance can uncover and damage archaeological and historical remains	(i) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work (ii) Stop work immediately to allow further investigation if any finds are suspected; and (iii) Inform local Archaeological Department office if a find is suspected and take any action, they require to ensure its removal or protection in situ.	Chance Find Protocol	All project site	Contractor	Document Checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
Construction Phase							
Impact due to site development Activities like clearing of vegetation, waste/debris disposal, and establishment of temporary labour camps may change the topography and appearance of the landscape.	(i) During the site levelling, excess soil or cut materials should be used for road construction or widening or properly disposed in an environmentally acceptable manner. (ii) Cut slopes should be re-vegetated immediately after widening activities. (iii) Borrow areas, if required should be rehabilitated and brought back as far as possible to their previous appearance. (iv) Cut off material should be used to widen the road or disposed of at proper disposal sites. (v) Provision and allocation of proper waste disposal bins and sites are required; and (vi) Supply of cooking gas should be provided by the contractor to eliminate	Site conditions, Labor camp locations and associated areas, area redevelopment, etc.	All project site	Contractor	Physical visits, records of housekeeping and site pictures clicked at different duration of development.	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	the use of firewood.						
Impact on Air Quality Exhaust emissions from vehicles, dust emissions, Fugitive dust during material transport and unloading, Dust suspension during site preparation, construction and trenching Emissions from DG sets, etc.	(i) Use of enclosures – use of screens and sheeting to contain dust; (ii) Use of paved / surfaced and cleaned haul routes and hard-standings; Use of water suppression and wheel washing; Choice of location and facilities for site storage where required (aggregates, sand, soil, cement etc.); Location of dust generating activities e.g., stone / flag cutting; Transport route selection and location (iii) No burning of waste or wood or logs on site. (iv) Plan the work sites properly, and demarcate the sites for stockpiling of, soils, gravel, and other construction materials	Air quality parameters like particulate matter, oxides of nitrogen, oxides of Sulphur	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	away from the traffic, vehicle, general worker movement to avoid disturbance of loose materials; (v) Use tarpaulins to cover sand and other loose material when transported by trucks; (vi) Clean wheels and undercarriage of haul trucks prior to leaving construction site; (vii) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly; contractor's vehicles and equipment should compulsorily have pollution under control (PUC) certificate and submit to PIU before deployment at site (viii) Obtain consent to establish (CTE) and consent to operate (CTO) for batching plant, hot mix plant, crushers and DG set etc. if specifically established for this project;						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	(ix) If contractor procures any material (such as ready mix concrete, asphalt/macadam, aggregates etc.), from third party agencies, contractor shall ensure that such agencies have all necessary clearances/permissions as required under the law; these include CTE/CTO from APPCB, environmental clearance, etc.; contractor shall collect the copy of these certificates and submit to PIU; PIU will approve the source only after all the certificates are submitted; and (x) Conduct air quality monitoring according to the EMP.						
Impact on Noise Levels Sources of noise pollution during the construction of the subproject is from machinery comprising	(i) Construction machinery should be located away from settlements; no facility should be located within 1 km of Shastri yanadi colony. (ii) Careful planning	Ambient noise and work site noise levels	All work site	Contractor	Noise monitoring with equipment	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
of mainly bull dozers, front end loaders, standby generators, fabrication workshop and other heavy earth machinery used in construction in addition to the vehicular movement within the project boundary.	of machinery operation and the scheduling of such operations can reduce noise levels. The use of equipment emitting noise not greater than 90 dB (A) for eight-hour operations shift and, when possible, the siting of construction yards at least 500 metres from residential areas should be adhered to. (iii) Contractors should be required to fit noise shields on construction machinery and to provide earplugs to the operators of heavy machines. (iv) Further to minimize noise impacts near sensitive receptors (nearby community), operation of excavator and other heavy machineries will be carried out mostly during off-hours (7 am to 9 am and 3.30 pm to 7 pm) and on holidays (Saturday and Sundays). Baseline noise will be established for all						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	sensitive areas prior to construction and follow up noise monitoring will be carried out during the construction.						
Impact on Water Resources The subproject will not use groundwater for construction purposes. Hence there are no impacts related with water abstraction anticipated from the subproject. Subproject does not involve development of water source. Subproject will meet the water demand from a bulk water supply subproject being implemented under Project 1 of VCICDP, which in turn sources water from a major reservoir in the state – Kandaleru reservoir.	(i) Preventing the run-off water beyond the Industrial cluster premises so that it will recharge the ground water in the same area; and Storm water drainage system should be provided inside the project area. (ii) Ground water extraction for construction activities will not be done and water or surface water wastage should be avoided. (iii) Construction works near waterways/water bodies shall not be undertaken during the monsoon season. (iv) Install temporary silt traps or sedimentation basins along the drainage	Water quality and water logging and runoff conditions	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	leading to the water bodies. (v) No construction camp within 500 m of any water body. (vi) Locate all parking, repair, and fuel and hazardous material storage area away from any water body. Vehicle parking and maintenance areas shall have waterproof floors from which drainage is collected and treated to legal standards. (vii) Refuel vehicles only in dedicated areas with waterproof floors from which drainage flows to an oil/water separator before discharge. (viii) Collect all waste oil, store in sealed damage-proof containers and dispose it to recyclers. (ix) All equipment operators, drivers, and warehouse personnel will be trained in immediate						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	response for spill containment and eventual clean up. (x) Temporary retention ponds, interception drains, and silt traps are installed to prevent silt laden water from entering adjacent water bodies/waterways; and (xi) The slopes of embankments leading to water bodies should be modified and re-channelized to prevent entry of contaminants.						
Impact on the Existing Traffic System Increased movement of trucks and heavy vehicles for transportation, may cause road safety issues	The contractor will submit a Traffic Management Plan to the Project Engineer at least two weeks before the construction starts that will result to obstruction. This Plan will recommend for approval of PIU, the safe and convenient temporary diversion of construction traffic movement, schedules, and road safety measures and information	Traffic management plan Implementation of TMP	All work site / internal roads and connecting roads to the NH	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	dissemination. Transportation of quarry and other construction material to the construction sites through heavy vehicles shall be done through existing major roads to the extent possible. This will restrict wear and tear to the interior village/minor roads. Small vehicles/un-motorized vehicle can also be used for its further transportation to the construction sites from temporary storage areas.						
Impact on Soil Quality. Land disturbance from the proposed construction activities will be confined to the immediate work area Borrow Areas and Quarries	(i) Borrow areas if required, shall not be located near forest areas. The edges of borrow sites shall be no closer than 3 m from any fence line or boundary. (ii) Adequate clearance shall be provided for the construction of catch drains.	Any New borrow area opened; required licenses and approvals	All work site / internal roads and connecting roads to the NH	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	(iii) Borrow sites shall have adequate drainage outlets unless the relevant landowner has agreed that the borrow area is to create a permanent tank or dam. Cut batter slopes shall not be steeper than 3 to 1 and shall be left by the Contractor in a tidy and safe condition to the satisfaction of the Engineer. Written clearance from the landowner/village head shall be obtained before leaving a site. (iv) Obtain statutory approval from competent authorities. (v) Borrow pits shall be selected from barren land/wasteland to the extent possible. (vi) Borrow areas should not be located on cultivable lands except in the situations where landowners' desires to level the land. The topsoil shall be preserved, and depth						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	shall be restricted to the desired level. (vii) Borrow areas should be excavated as per the intended end use by the owner. (viii) The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and amount that can be borrowed. (ix) The dredged material from the riverbank shall be tested for presence of heavy metals and other pollutants before its reuse. (x) The depths in borrow pits to be regulated so that the sides shall not be steeper than 25%, to the extent possible, borrow areas shall be sited away from habited areas. Borrow areas shall be levelled with salvaged material or other filling materials which do not pose contamination of soil.						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	(xi) Monitoring of rehabilitation plan of borrow areas.						
Impact on Ecology	(i) Minimize removal of trees by adopting to site condition, remove tree only where it is necessary (ii) Obtain prior permission for tree cutting (iii) Plant and maintain 2 trees for each tree that is removed. (iv) Prior to removal of trees, conduct a confirmatory survey of trees for any birds and nests to confirm there are no protected species of birds; if any protected species are noticed, inform ADB, and update the IEE and EMP, and work should commence only after ADB clearance of IEE and EMP		All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Landscape and Aesthetics	(i) Prepare and implement spoils management plan;	Site cleanliness and upkeep	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	(v) Avoid stockpiling of excess excavated soils; (vi) Coordinate with for beneficial uses of excess excavated soils or immediately dispose to designated areas; (vii) Recover used oil and lubricants and reuse or remove from the sites; (viii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; (ix) Remove all wreckage, rubbish, or temporary structures which are no longer required; (x) Request PMU/ to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.						monthly PMSC/ PMU to inspect quarterly
Solid waste	(i) General refuse generated on-site will be	Solid waste generation, storage	All work site /	Contractor	Site inspection and documents	Contractor / APIIC /	Contractor to Monitor regularly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	collected in waste skips and separated from construction and chemical waste. (ii) A local authorized waste handler will be employed to remove general refuse from the site, separately from construction waste and hazardous wastes, on regular basis to minimize odor, pest and litter impacts. (iii) Burning of refuse on construction sites will be prohibited.	and dispisal practices	internal roads and connecting roads to the NH		checking	PMU/PMSC	APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Accessibility	(i) Prepare and implement a Traffic Management Plan (ii) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites; (iii) Schedule transport and hauling activities during non-peak hours; (iv) Locate entry and	Preparation and implementation of TMP	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	exit points in areas where there is low potential for traffic congestion; (v) Keep the site free from all unnecessary obstructions; (vi) Drive vehicles in a considerate manner; (vii) Coordinate with Traffic Police for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours; and (viii) Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.						
Work Camps Temporary air and noise pollution from machine operation,	(i) Consult with APIIC/ before locating project offices, sheds, and construction plants; (ii) Minimize removal of vegetation and disallow cutting of	Location of camps; establishment and operation practices	All work sites	Contractor	Physical checks, inspection reports	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
water pollution from storage and use of fuels, oils, solvents, and lubricants Unsanitary and poor living conditions for workers	trees; (iii) Provide drinking water, water for other uses, and sanitation facilities for employees; (iv) Ensure conditions of livability at work camps are maintained at the highest standards possible at all times; (v) Prohibit employees from poaching wildlife and cutting of trees for firewood; (vi) Train employees in the storage and handling of materials which can potentially cause soil contamination; (vii) Recover used oil and lubricants and reuse or remove from the site; (viii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; (ix) Remove all						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	wreckage, rubbish, or temporary structures which are no longer required; and (x) Request PMU/ to report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.						
Social and Cultural Resources	Follow the protocol for chance finds in any excavation work; Stop work immediately to allow further investigation if any finds are suspected; and Inform PMU/ if a find is suspected and take any action they require ensuring its removal or protection in situ.	Chance find protocol	All work sites	Contractor	Document verification, site visits and consultations	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Occupational Health and Safety	(i) Comply with all national, state and local labour laws; (ii) Following best practice health and safety guidelines such as IFC's General EHS Guidelines (iii) Develop and implement site-specific	Preparation and implementation of site specific health ands safety management plan	All work sites	Contractor	Physical checks, inspection reports	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	occupational health and safety (OHS) plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective equipment; (c) OHS Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents; (iv) Conduct work in confine spaces, trenches, and at height with suitable precautions and using standards and safe construction methods; do not adopt adhoc methods; all trenches deeper than 1.5 m shall be provided with safety shoring/braces; (v) Ensure that qualified first aid is provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	(vi) Provide medical insurance coverage for workers; (vii) Secure all installations from unauthorized intrusion and accident risks; and (viii) Provide supplies of potable drinking water; (ix) Provide clean eating areas where workers are not exposed to hazardous or noxious substances; (x) Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; (xi) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	unescorted; (xii) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; (xiii) Ensure moving equipment is outfitted with audible back-up alarms; (xiv) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; (xv) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	hearing protection. The use of hearing protection shall be enforced actively; (xvi) Conduct regular health check-ups for workers; (xvii) Provide periodical awareness camps and special trainings for workers for health issues and risks in construction sites (xviii) An emergency plan shall be prepared duly approved by engineer in charge to respond to any instance of safety hazard.						
COVID 19 risk Spread of infection which causes serious symptoms like difficulty in breathing, chest pain and loss of speech or movement. If not treated it will lead to death	Taking cognizance of situation at time of mobilisation, the Contractor shall undertake a COVID risk assessment of project area and prepare a COVID Response and Management Plan and submit to APIIC for approval. The preparation of the	Preparation and implementation of COVID Response and management plant	All work sites	Contractor	Physical checks, inspection reports	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	plan shall consider guidance of Government of India and GoAP and be in accordance with the H&S plan of VCICDP (Refer Annex 20) The contractor shall submit a weekly monitoring and progress report to APIIC during implementation.						
Fire accidents due to hazardous material handling Health Issues	Adequate safety measures as per OSHA standards will be adopted Construction site will be secured by fencing with controlled/limited entry points. Hazardous materials such as lubricants, paints, compressed gases, and varnishes etc., will be stored as per the prescribed/approved safety norms. Construction site will be secured by fencing with controlled/ limited entry points	Number of accidents, Number of near miss reported	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	Medical facilities including first aid will be made available for attending to injured workers. Handling and storage as per statutory guidelines. Positive isolation procedures will be adhered Handling and storage as per MSIHC rules, MoEF guidelines with Fire protection system. Hazardous wastes, if any, shall be disposed through APPCB/CPCB approved vendors						
Post-construction clean-up	Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and all excavated areas shall be reinstated to the original condition, all disrupted utilities restored, the area that previously housed the	Site clearance / work completion certificate	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor and APIIC to inspect and confirm.

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up, all hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the prescribed guidelines set out in the contract specifications.						
Operation Phase							
Operation of infrastructure	(i) Ensure that standard operating procedures are adapted for all infrastructure, and ensure preventive, periodic, and emergency maintenance activities as needed; provide adequately trained operators and maintenance staff (ii) Provide necessary personnel protection equipment, use appropriate maintenance equipment and tools (iii) Recirculate	Air, Water, Noise, Land monitoring through periodic testing and physical observations / audits.	All developed work site and infrastructure facilities	Operations / Maintenance Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor and APIIC to inspect and confirm.

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	backwash/process wastewater in the WTP, and ensure that no wastewater discharge (iv) Ensure that sludge is dried properly prior to its disposal or reuse (v) Operate chlorination facility with all safety features and trained staff, ensure emergency procedures (vi) Diesel generator sets shall maintain stack height as per CPCB regulation (vii) Dust suppression measures such as water sprinkling shall be carried out during infrastructure repair and maintenance activities. (viii) Construction safety measures shall be adapted during the repair and maintenance works; adequate PPE's shall be provided workers. (ix) Implement health and safety measures in power infrastructure operation and						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	maintenance as per applicable standards and guidelines (x) Dispose waste oil or any other hazardous material via agencies authorized by APPCB (xi) Enforce road and traffic safety rules in the industrial cluster strictly (xii) Ensure that wastewater management system is developed prior to establishment and operation of any industry in the start up area (xiii) Ensure that wastewater is not discharged into stormwater drains (xiv) Ensure regular cleaning and maintenance of drains						

B. Environment Monitoring Program

270. The monitoring and evaluation are critical activities in implementation of the Project. Monitoring involves periodic checking to ascertain whether activities are going according to plan or not. It provides the necessary feedback for project management to ensure project objectives are met and on schedule. The reporting system is based on accountability to ensure that the environmental mitigation measures are implemented. Environmental monitoring program has the underlying objective to ensure that the intended environmental mitigations are realized and these results in desired benefits to the target population causing minimal deterioration to the environmental parameters. Such program targets proper implementation of the EMP. The broad objectives are:

(i) To evaluate the performance of mitigation measures proposed in the EMP.

(ii) To evaluate the adequacy of environmental assessment.

(iii) To suggest ongoing improvements in management plan based on the monitoring and to devise fresh monitoring on the basis of the improved EMP.

(iv) To enhance environmental quality through proper implementation of suggested mitigation measures.

(v) To meet the requirements of the existing environmental regulatory framework and community obligations.

C. Performance Indicators

271. The significant physical, biological and social components affecting the environment at critical locations serve as wider/overall Performance Indicators. However, the following specific environmental parameters can be quantitatively measured and compared over a period of time and are, therefore, selected as specific Performance Indicators (PIs) for monitoring because of their regulatory importance and the availability of standardized procedures and relevant expertise.

272. The following programme as detailed in the environmental monitoring programme for construction as well as operation phases shall be implemented by the APIIC. Besides the monitoring, the compliances to all environmental clearance conditions and regular permits from APPCB/SEIAA, AP shall be monitored and reported periodically. The environmental attributes to be monitored during construction and operational phases of the project, specific description along with technical details of environmental monitoring including the environmental attributes, monitoring parameters, frequency of monitoring and compliance are presented in Section below.

273. The environmental monitoring programme proposed to be followed by APIIC has been formulated in this Section. Monitoring methods for the environmental monitoring of the specified parameters, including for sampling and analysis, shall be as per the applicable standards and guidelines of Central Pollution Control Board. These are specified in Appendix 7.

Table 39: Environmental Monitoring Plan

Environmental Attributes	Parameters to be monitored	Frequency of Monitoring and Locations	Compliance	Implementation	Supervision
Construction Phase					
Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO,	Twice a month during construction	National Ambient Air Quality	Contractor/APIIC through approved monitoring agency	APIIC

Environmental Attributes	Parameters to be monitored	Frequency of Monitoring and Locations	Compliance	Implementation	Supervision
		Location: (i) Sastriyanadhi Colony; (ii) Boundary near Axora Resources; (iii) boundary around excavation / ongoing construction areas	Standards released during November 2009 and given as **Appendix 7**		
Noise Levels	Day and night noise levels	Once a month during construction Location: (i) Sastriyanadhi Colony; (ii) Boundary near Axora Resources; (iii) boundary around excavation / ongoing construction areas.	National Ambient Noise Standards and given as **Appendix 8.**	Contractor/APIIC through approved monitoring agency	APIIC
Water Quality	Physical, Chemical and Biological	Once a month during construction 2 locations: 2 surface water bodies	IS10500, 2012 drinking water standards and given as **Appendix 9.** ISI-IS2296-1982 standards for use-based classification of surface water and given as **Appendix 10.**	Contractor/APIIC through approved monitoring agency	APIIC
Soil	Soil texture, type, electrical conductivity, pH, infiltration, porosity, etc.	Once a year during construction 2 locations: agricultural land and barren land	Baseline data, Soil standards by Indian Council of Agricultural Research, New Delhi and given as **Appendix 11.**	Contractor/APIIC through approved monitoring agency	APIIC
DG Stack Monitoring	PM_{10}, $PM_{2.5}$, SO_2, NO_2, and CO	Periodic	Emission limits for new diesel engine up to and more than 800 kW for generator set and given as **Appendix 12**	Contractor/APIIC through approved monitoring agency	APIIC
Drinking Water Supply	Physical, Chemical and Biological	Periodic	IS10500:2012 drinking water standards and given as	Contractor/APIIC through approved monitoring agency	APIIC

Environmental Attributes	Parameters to be monitored	Frequency of Monitoring and Locations	Compliance	Implementation	Supervision
	Drinking water quality parameters (IS 10500-2012)		**Appendix 13**		
Operation Phase					
Treated Water Quality	Physical, Chemical and Biological	After commissioning and prior to supply and periodic during operation Location: WTP treated water quality	IS10500, 2012 drinking water standards for Groundwater and given as **Appendix 9** ISI-IS2296-1982standards for use-based classification of surface water and given as **Appendix 10.**	APIIC through approved monitoring agency	APIIC
WTP sludge quality	pH and heavy metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc)	Once a year or as required prior to reuse/ disposal of dried sludge Location WTP sludge	Standards for Composting, Schedule II A, Solid Waste Management Rules, 2016, FCO = Fertilizer Control Order, 1985, amendments in 2009 and 2013.	APIIC through approved monitoring agency	APIIC

D. EMP Implementation Cost

2. Most of the mitigation measures require the contractors and industries to adopt good site practice, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. Regardless of this, any costs of mitigation by the construction contractors or industries will be included in the budgets for the civil works and do not need to be estimated separately here. Mitigation that is the responsibility of will be provided as part of their management of the project, so this also does not need to be duplicated here. Cost for the capacity building program is included as part of the project.

Table 40: Cost Estimates to Implement the EMP

S. No.	Purpose	Cost items	Million (INR)	Responsibility
1	Environmental Monitoring	Ambient air quality monitoring; Ambient noise level monitoring Water quality monitoring Soil Marine environment		Monitoring Amount Part of BOQ Contractor/APIIC to monitor compliance
2	Occupational Health and Safety	Health Tests	10	Contractor
3	Environmental Training		0.5	Contractor
Total Cost			**10.5**	

E. Institutional Capacity Development Program

274. The effective implementation and close supervision of the environmental management to mitigate the environmental impacts, which are likely to arise due to the construction and operation phases of proposed infrastructure development at the Start-up area could be achieved through a suitable institutional mechanism. The staff/team assigned the task of Environmental Management shall make up the Institutional Arrangement needed for implementation of the environmental measures. We understand that APIIC essentially has in place an Institutional Mechanism by means of having an in-house Environmental Cell which ideally can take lead in Environmental Management for proposed development project.

Table 41: Training Program for Environmental Management

Items	Pre-construction	Construction	
Training Title	Orientation workshop	Orientation program/ workshop for contractors and supervisory staff	Experiences and best practices sharing
Purpose	To make the participants aware of the environmental safeguard requirements of ADB and Government of India and how the project will meet these requirements	To build the capacity of the staff for effective implementation of the designed EMPs aimed at meeting the environmental safeguard compliance of ADB and Government of India	To share the experiences and best practices aimed at learning lessons and improving implementation of EMP
Contents	Module 1: Orientation ADB Safeguards Policy Statement Government of India Environmental Laws and Regulations Module 2: Environmental Assessment Process ADB environmental process, identification of impacts and mitigation measures, formulation of an environmental management plan (EMP), implementation, and monitoring requirements Review of environmental assessment report to comply with ADB requirements Incorporation of EMP into the project design and contracts	Roles and responsibilities of officials/contractors/consultants towards protection of the environment Environmental issues during construction Implementation of EMP Monitoring of EMP implementation Reporting requirements	Experiences on EMP implementation – issues and challenges Best practices followed
Duration	1 day	1 day	1 day on a regular period to be determined by DOI, APIIC, and PMSC

Items	Pre-construction	Construction	
Participants	Executing and implementing agencies, DOI, and DOI staff (technical and environmental) involved in the project implementation	DOI/PMU APIIC Contractors	DOI APIIC Contractors

ADB = Asian Development Bank; EMP = Environmental Management Plan; APIIC = Project Implementation Unit; PMU = Project Management Unit; PMSC = Design and Supervision Consultant.

F. Generic Guidelines for Implementing EMP

3. A set of generic guidelines have been formulated to avoid potential impacts due to construction and its allied activities. These guidelines have been attached as Appendices with following headings.

(i) Appendix 14: Rapid Environmental Assessment (REA) Checklist
(ii) Appendix 15: Checklist for Preliminary Climate Risk Screening
(iii) Appendix 16: Records of Public Consultation
(iv) Appendix 17: Sample Annual Environmental Monitoring Report Template
(v) Appendix 18: Sample Environmental Site Inspection Report
(vi) Appendix 19: Construction Site Checklist for EMP Monitoring
(vii) Appendix 20: Sample Grievance Registration Form

XII. CONCLUSION AND RECOMMENDATION

275. This report assessed various existing environmental parameters in and around the project and the actions planned to minimize any significant negative impact. The project site is not located in a sensitive ecosystem and is not significant from the historical and cultural perspective. The Checklist for Rapid Environmental Assessment (REA) is filled and given as Appendix 14. The project will not cause any significant adverse environmental and social impacts during construction, or operation phase of the project. Subproject site mostly comprises barren lands, vacant lands and agricultural/commercial plantations, and there are no environmentally sensitive areas such as forests or protected areas in or close to project site. There are also no archeologically, culturally or historically sensitive areas. There is a small habitation within the area, and no component sites are located close to the habitation.

276. The construction phase impacts are expected to be limited to the construction site and will therefore be temporary in nature. These can be mitigated with appropriate mitigation measures included in the EMP. Regular monitoring of the recommended mitigation measures shall also be carried out during the implementation phase of the project. No notable impacts envisaged during the operation phase of the infrastructure.

277. Considering the above, the proposed subproject at Chittoor Node South Zone Start-up Industrial area has been categorized as Category ‘B’.

278. However, as per GoI requirements, the proposed subproject at Chittoor Node South Zone Industrial area required an Environmental Clearance (EC) and necessary environmental impact assessment reports were prepared according to EIA Notification, 2006 and its General and Specific Conditions. The ECs was obtained on 11 November 2020 and the requirements will be complied with during implementation. The IEE includes a comprehensive program for monitoring the effectiveness of mitigation measures. An EMP is prepared identifying mitigation measures and specifying administrative arrangements to ensure that mitigation measures are implemented, and their effectiveness is monitored. A budget for the EMP is also provided.

279. It is pertinent to mention that the Executing Agency and APIIC shall ensure that this IEE and EMP are included in bid documents and forms part of bid document and civil works contract. The same shall be revised if necessary, during project implementation or if there is any change in the project design and with approval of ADB.

280. The public participation processes undertaken during project design ensured stakeholders are engaged during the preparation of the IEE. The planned information disclosure measures and process for carrying out consultation with affected people will facilitate their participation during project implementation.

281. The project’s grievance redressal mechanism will provide the citizens with a platform for redressal of their grievances, and describes the informal and formal channels, time frame, and mechanisms for resolving complaints about environmental performance.

The EMP will assist the DOI and contractors in mitigating the environmental impacts and guide them in the environmentally sound execution of the proposed project. The EMP will also ensure efficient lines of communication between the implementing agency, project management unit, and contractors.

282. This subproject proposed under the ADB funded VCICDP Project 2 is limited to development of internal infrastructure such as internal roads, drains, water supply, power distribution and development of green belt in the start-up area of industrial cluster. APIIC will take development of remaining infrastructure and amenities, including wastewater

management systems, after completion of works under this subproject. Subsequently, APIIC will allot vacant developed plots and factory sheds to entrepreneurs / companies for establishment of industries, allied facilities, services, commercial establishments etc., as per prevailing regulations. Industrial area local authority (IALA) established by APIIC will manage the industrial park. Member industries and service agencies will be responsible for the establishment and operations of respective units in compliance with the applicable regulations, including EIA Notification 2006, and other regulations related to air, water, noise, hazardous waste, solid waste, health and safety, labour welfare etc. APIIC has conducted an EIA study for the overall industrial area and obtained environmental clearance from the MOEFCC. Individual industries, depending on the type and scale of operation, will conduct EIA study if required and obtain EC for their individual operations, and will obtain consent to establish (CTE) and consent to operate (CFE) from APPCB. Industries will also obtain other necessary permissions and licenses and will be responsible for compliance.

283. PMU and APIIC will ensure that necessary wastewater management facilities including CETP are established prior to start of industrial operations. APIIC has planned that these will be established on Design-Build-Finance-Operate-Transfer (DBFOT) mode after completion of internal infrastructure in start-up areas funded by ADB.

284. The subproject is therefore unlikely to cause significant adverse impacts. The potential impacts that are associated with design, construction and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures.

285. The IEE / EMP shall be updated as needed to include any changes in the proposed designs / activities during the detailed design stage and activities undertaken by the member industries during the operational phase and monitored by APIIC. The updated IEE during the implementation phase to reflect any changes, amendments will be reviewed and approved by ADB.

Appendix 1: MoEF&CC Terms of Reference

F. No. 21-76/2018-IA.III
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj
New Delhi - 110 003

Dated: 4th January, 2019

To

The Vice Chairman & Managing Director
APIIC Limited, 59A-20/3/2A, 1st Floor
Sri Siva Complex, Funtimes Club Road
Teachers Colony, Vijayawada - 520 008
Andhra Pradesh

Sub: Development of Industrial Park (Phase-I) at Srikalahasthi Node situated in Villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh by M/s Andhra Pradesh Industrial Infrastructure Corporation Ltd. - **Terms of Reference regarding**.

Sir,

This has reference to your letter no. CE(S)/APIIC/VCIC/North&South Node/Consultancy Services/2018-19 dated 5th October, 2018 submitting above mentioned proposal online on 5th October, 2018 for seeking Terms of Reference (TOR) as per the provisions of the Environment Impact Assessment (EIA) Notification, 2006 and subsequent amendments under the Environment (Protection) Act, 1986.

2. The proposal for Development of Industrial Park (Phase-I) as a part of Visakhapatnam Chennai Industrial Corridor Development Programme (VCICDP) at Srikalahasthi Node, Villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh by M/s Andhra Pradesh Industrial Infrastructure Corporation Ltd. was considered by the Expert Appraisal Committee (EAC) for Industrial Estate/Area, SEZ and Highways projects in its 199th meeting held on 15th October, 2018 in the Ministry of Environment, Forest and Climate Change, New Delhi.

3. During the above meeting, the project proponent along with EIA Consultant M/s L&T Infrastructure Engineering Limited, made a presentation and provided following information to the Committee:

(i) The proposal involves Development of Industrial Park (Phase-I) at South Block, Srikalahasthi, Node.

[Online Proposal No.: IA/AP/NCP/80694/2018]

(ii) **Location:** Project site is located at Routhsurmala, Gowdamala, Kothapalem, Alathuru and B.S.Puram villages in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh.

(iii) **Land use of the site and around the site up to 10 km radius:** The land use observed from the study area is Agriculture (Crop land/Planation/fallow), Barren Unculturable wasteland (Scrub/Gullied Ravinous land), etc.

(iv) **Justification for selection of the site:** 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 neighbouring 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 project site.
- 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 is predominantly barren/un culturable/ wasteland (scrub land & salt affected) and partly agricultural crop/plantations, water bodies/streams/canals, abandoned 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.

(v) **Total water requirement and its source:**

- Total one time water demand for the proposed project is ~18.0 MLD and 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 project 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.
- Necessary Clearances as applicable will be obtained and submitted in EIA report.

(vi) **Municipal waste (domestic and or commercial wastes):** 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 quantification, collection, handling and disposal/ management shall be covered in the EIA Report.

(vii) **Hazardous wastes (as per Hazardous Waste Management Rules):** 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.

(viii) **Water bodies diversion if any:** There are natural drains of varying in orders and distributary canals noticed in the project area. Planning is being done in such a way that there will not be any disturbance for the existing drainage pattern of the region/study area. Maintaining the major natural drains un disturbed with buffer and Diversion of lower order drains if any shall be carried out provided that drainage pattern of the region is maintained. Storm Water Drainage System will be provided.

(ix) **If the project involves diversion of forest land, extend of the forest land:** No.

(x) **Tree cutting, types, numbers, girth size etc:** The land use of the site is predominantly barren/unculturable/ wasteland (scrub land etc.,) and partly agricultural crop. In addition there are plantations which consist of Eucalyptus/*Acacia auriculiformis*/Mango trees. Scattered trees of *Prosopis juliflora* and *Borassus flabellifer* were also noticed. Clearance of these present in the site is envisaged.

(xi) **Rehabilitation involved if any:** Relocation of the Sasthriyanadhi settlement is being planned which envisages clearance of existing pucca houses, huts and other structures. Totally, 33 houses where noticed inside the sasthriyanadhi settlement, in which 15 houses are Pucca structures and 18 are huts

(xii) **Terrain, level with respect to MSL, requirement of filling, if any:** The majority of the project site 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. Abandoned quarry elevations are reported less than 30 m.

(xiii) **Whether the project is in Critically Polluted area:** No.

(xiv) **If the project falls within 10 km of eco- sensitive area, Name of eco-sensitive area and distance from the project site:** No.

(xv) **Investment/Cost of the project:** INR 466 Crores

(xvi) **Employment potential:** Direct employment potential of about 30,000 persons.

(xvii) **Benefits of the project:**

- 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.
- The proposed project is in Visakhapatnam–Chennai Industrial Corridor (VCIC), is a key part of the East Coast Economic Corridor (ECEC), India's first coastal corridor Its development which is in line with the National/State objective of improving manufacturing GDP, promoting port-led industrialization etc.,

(xviii) **If any court case pending for violation of the environmental laws:** No.

4. Based on the deliberations in the meeting and information provided by the proponent in support of the project, the EAC recommended for grant of TOR. As per the recommendation of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords TOR for 'Development of Industrial Park (Phase-I) as a part of Visakhapatnam Chennai Industrial Corridor Development Programme (VCICDP) at Srikalahasthi Node, Villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh by M/s Andhra Pradesh Industrial Infrastructure Corporation Ltd.' and for preparation of EIA/EMP report with public consultations subject to compliance of all conditions as notified in the standard ToR applicable for such projects and specific conditions, as mentioned below:

A. Project Specific Conditions

(i) Detailed natural drainage management plan to be submitted and ensure that original course of drainage is not disturbed.

(ii) Detailed greenbelt plan to be submitted.

(iii) No Red category industry to be established along the boundary where habitation is at the distance of 200-300 m from the boundary of proposed project site.

(iv) Source of water and its permission from the competent authority be submitted. No ground water is to be used for this project.

(v) Industrial zoning plan shall be submitted.

(vi) 10 air quality monitoring stations to be established during BLD collection.

(vii) Agreement between third party TSDF (nearest to project site) and PP to ensure the safe disposal of solid waste.

(viii) A plan for treated effluent discharged into deep sea through pipelines.

B. General Conditions

(i) Reasons for selecting the site with details of alternate sites examined/rejected/selected on merit with comparative statement and reason/basis for selection. The examination should justify site suitability in terms of environmental damage, resources sustainability associated with selected site as compared to rejected sites. The analysis should include parameters considered along with weightage criteria for short-listing selected site.

(ii) Submit the details of the land use break-up for the proposed project. Details of land use around 10 km radius of the project site. Analysis should be made based on latest satellite imagery for land use with raw images. Check on flood plain of any river.

(iii) Submit details of environmentally sensitive places, land acquisition status, rehabilitation of communities/ villages and present status of such activities.

(iv) Examine the impact of proposed project on the nearest settlements.

(v) Examine baseline environmental quality along with projected incremental load due to the project taking into account of the existing developments nearby.

(vi) Environmental data to be considered in relation to the project development would be (a) land, (b) groundwater, (c) surface water, (d) air, (e) biodiversity, (f) noise and vibrations, (g) socio economic and health.

(vii) Submit a copy of the contour plan with slopes, drainage pattern of the site and surrounding area, and any obstruction of the same by the project.

(viii) Details regarding project boundary passing through any eco- sensitive area and within 10 km from eco-sensitive area.

(ix) Green buffer in the form of green belt to a width of 15 meters should be provided all along the periphery of the industrial area. The individual units should keep 33% of the allotted area as a green area.

(x) Submit the details of the trees to be felled for the project.

(xi) Submit the details of the infrastructure to be developed, if applicable.

(xii) Submit the present land use and permission required for any conversion such as forest, agriculture etc.

(xiii) Submit details regarding R&R involved in the project

(xiv) Zoning of the area in terms of 'type of industries' coming-up in the industrial area based on the resource requirement along with likely pollutants with quantity from the various industries.

(xv) The project boundary area and study area for which the base line data is generated should be indicated through a suitable map. Justification of the parameters, frequency and locations shall be discussed in EIA.

(xvi) Submit Legal frame work for the implementation of Environmental Clearance conditions - to be clearly spelt out in the EIA report.

(xvii) Submit Roles and responsibility of the developer etc for compliance of environmental regulations under the provisions of EP Act.

(xviii) Site justification of the identified industry sectors from environmental angle and the details of the studies conducted if any.

(xix) Ground water classification as per the Central Ground Water Authority.

(xx) Submit the source of water, requirement vis-a-vis waste water to be generated along with treatment facilities, use of treated waste water along with water balance chart taking into account all forms of water use and management.

(xxi) Rain water harvesting proposals should be made with due safeguards for ground water quality. Maximize recycling of water and utilization of rain water. Examine and submit details.

[Online Proposal No.: IA/AP/NCP/80694/2018]

(xxii) Examine soil characteristics and depth of ground water table for rainwater harvesting.

(xxiii) Examine details of solid waste generation treatment and its disposal.

(xxiv) Examine and submit details of use of solar energy and alternative source of energy to reduce the fossil energy consumption.

(xxv) In case DG sets are likely to be used during construction and operational phase of the project, emissions from DG sets must be taken into consideration while estimating the impacts on air environment. Examine and submit details.

(xxvi) Examine road/rail connectivity to the project site and impact on the traffic due to the proposed project. Present and future traffic and transport facilities for the region should be analysed with measures for preventing traffic congestion and providing faster trouble free system to reach different destinations in the city.

(xxvii) A detailed traffic and transportation study should be made for existing and projected passenger and cargo traffic.

(xxviii) Examine the details of transport of materials for construction which should include source and availability.

(xxix) Examine noise levels - present and future with noise abatement measures.

(xxx) Identify, predict and assess the environmental and sociological impacts on account of the project. A detailed description with costs estimates of CSR should be incorporated in the EIA/EMP report.

(xxxi) Examine separately the details for construction and operation phases both for Environmental Management Plan and Environmental Monitoring Plan with cost and parameters.

(xxxii) Submit details of a comprehensive Disaster Management Plan including emergency evacuation during natural and man-made disaster.

(xxxiii) Details of litigation pending against the project, if any, with direction/order passed by any Court of Law against the Project should be given.

(xxxiv) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.

(xxxv) Any further clarification on carrying out the above studies including anticipated impacts due to the project and mitigative measure, project proponent can refer to the model ToR available on Ministry website "http://moef.nic.in/Manual/IndustrialEstate".

5. Following general guidelines shall be strictly adhered:

(i) The EIA document shall be printed on both sides, as for as possible.

(ii) All documents should be properly indexed, page numbered.

[Online Proposal No.: IA/AP/NCP/80694/2018]

(iii) Period/date of data collection should be clearly indicated.

(iv) Authenticated English translation of all material provided in Regional languages.

(v) The letter/application for EC should quote the MoEF&CC File No. and also attach a copy of the letter prescribing the TOR.

(vi) The copy of the letter received from the Ministry on the TOR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.

(vii) The final EIA-EMP report submitted to the Ministry must incorporate the issues in TOR and that raised in Public Hearing. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific TOR prescribed by Ministry and the issue raised in the P.H. have been incorporated. Questionnaire related to the project (posted on MoEF&CC website) with all sections duly filled in shall also be submitted at the time of applying for EC.

(viii) Grant of TOR does not mean grant of EC.

(ix) Grant of TOR/EC to the present project does not mean grant of approvals in other regulations such as the Forest (Conservation) Act 1980 or the Wildlife (Protection) Act, 1972.

(x) Grant of EC is also subject to Circulars and Office Memorandum issued under the EIA Notification 2006 and subsequent amendments, which are available on the MoEF&CC website: www.envfor.nic.in.

(xi) The status of accreditation of the EIA consultant with NABET/QCI shall be specifically mentioned. The consultant shall certify that his accreditation is for the sector for which this EIA is prepared.

(xii) On the front page of EIA/EMP reports, the name of the consultant/consultancy firm along with their complete details including their accreditation, if any shall be indicated. The consultant while submitting the EIA/EMP report shall give an undertaking to the effect that the prescribed TOR (TOR proposed by the project proponent and additional TOR given by the MoEF) have been complied with and the data submitted is factually correct (Refer MoEF office memorandum dated 4th August, 2009).

(xiii) While submitting the EIA/EMP reports, the name of the experts associated with/involved in the preparation of these reports and the laboratories through which the samples have been got analysed should be stated in the report. It shall clearly be indicated whether these laboratories are approved under the Environment (Protection) Act, 1986 and the rules made there under (Please refer MoEF office memorandum dated 4th August, 2009). The project Coordinator of the EIA study shall also be mentioned.

(xiv) All the TOR points as presented before EAC shall be covered.

6. A detailed draft EIA/EMP report shall be prepared in terms of the above additional TOR and should be submitted to the State Pollution Control Board for Public Hearing. Public Hearing to be conducted for the project in accordance with the provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing shall be conducted based on the TOR letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the website.

7. The project proponent shall submit the detailed final EIA/EMP report prepared as per TOR including issues raised during Public Hearing to the Ministry for considering the proposal for environmental clearance within 3 years as per the MoEF&CC OM No J-11013/41/2006-IA-II(I) (Part) dated 29th August, 2017.

8. The consultants involved in preparation of EIA/EMP report after accreditation with Quality Council of India/National Accreditation Board of Education and Training (QCI/NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/Laboratories including their status of approvals etc. vide notification of the MoEF dated 19th July, 2013.

9. The prescribed TOR would be valid for a period of three years for submission of the EIA/EMP Reports.

04/01/2019

(Raghu Kumar Kodali)
Director/Scientist F

Copy to:

The Member Secretary, Andhra Pradesh Pollution Control Board, D. No. 33-26-14 D/2, Near Sunrise Hospital, Pushpa Hotel Centre, Chalamalavari Street, Kasturibaipet, Vijayawada – 520 010

04/01/2019.

(Raghu Kumar Kodali)
Director/Scientist F

[Online Proposal No.: IA/AP/NCP/80694/2018]

Appendix 2: Environmental Clearance

File No.: 21-76/2018-IA.III
[Proposal No. IA/AP/NCP/80694/2018]
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan,
Jor Bagh Road, Ali Ganj
New Delhi – 110 003

Dated: 11th November, 2020

To,
Vice Chairman and Managing Director (VCMD)
Andhra Pradesh Industrial Infra Structure Corporation
4th Floor, Parisrama Bhavan, 5-9-58/B, Fateh Maidan Road
Hyderabad, Telangana-500 004

Subject: Development of Industrial Park (Phase-I) at Srikalahasthi Node situated in villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh by M/s Andhra Pradesh Industrial Infrastructure Corporation Ltd., Routhusurumala, Gowdamala, Kothapalem, Alathuru and B.S.Puram revenue villages in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh - Environmental Clearance

Sir,

This has reference to your online proposal to this Ministry on 17th Sep 2020 regarding Environmental Clearance for Development of Industrial Park (Phase-I) at Srikalahasthi Node situated in villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh by M/s Andhra Pradesh Industrial Infrastructure Corporation Ltd.

2. APIIC has identified a parcel of land of about 2770 acres (~1121 ha) at Srikalahasthi Node in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh to establish Industrial Park for attracting industries under Building Materials Industry/Non Metallic minerals, Electronics and Consumer Durable Industry, Engineering Industries (Machinery/Electrical Equipment's/Automobile etc.,), Food and Agro Processing, Apparels and Textile manufacturing, Chemical and Pharma Industry, Logistic & Ware house and MSME (includes Leather, Plastics, wood etc.) sectors.

The infrastructure development being proposed includes water supply, water distribution, internal roads, storm water drains, electrical distribution network, internal street lighting, wastewater and waste management facilities, other utilities such as technical and support buildings, housing along with allied facilities. Apart from industrial area there will be technical infrastructure facilities, amenities & utilities, township and logistics facilities. The total cost of the project is ₹ 390.0 Crores. As per Schedule of EIA Notification, 2006, the extant proposal falls under 7 (c) Category A. No CRZ clearance is required for the proposed project. ToR for the project was accorded vide letter no. F. No. 21-76/2018-IA.III dated 4th January, 2019.

3. The Public Hearing was conducted on July 24, 2020 by APPCB. The meeting was conducted by the panel consisting of DRO Chittoor District, Environmental Engineer, Regional office, Andhra Pradesh Pollution Control Board, Tirupathi, Chittoor District. As per the approved

ToR it is ensured that "No Red category industry will be established within 300 m of settlement along the boundary of proposed project site.

4. The water demand is estimated at 17.16 MLD including fire water demand among which 8.75 MLD (including losses) is fresh water and remaining 5.84 MLD as recycled water. To have a reliable continuous supply of surface water for the Industries, the bulk water supply of 4.55 TMC raw water is proposed for industrial clusters in southern region of Andhra Pradesh with Kandaleru reservoir as source on daily drawl basis and to permit to draw the allocated water at 2.6 km on TGP canal (sankuranthipalle weir). Estimated Volume of run-off that can be harvested will be 56262.31 Volume (m^3)/year. Rainwater harvesting techniques will be adopted at park and industrial level.

5. Total municipal solid waste generation is estimated as ~15 TPD and estimated Industrial Solid Waste Generation is ~ 102 TPD, which includes hazardous and non–hazardous solid waste. Reusable waste will be used with the premises whereas recyclable waste will collected, stored and disposed to agencies authorised by APPCB for Recycling. Hazardous waste will be sent to new TSDF near Raviguntapalli, Nellore which 60 km north of project site. To ensure the safe disposal of solid waste, M/s Coastal Waste Management Project (Unit-2) by M/s Mumbai Waste Management Limited (a subsidiary of M/s Ramky Enviro Engineers Limited) gave consent for accepting the Hazardous waste generated from member industries of IP. Industries shall follow Hazardous and other Waste (Management and Transboundary Movement) and amendment thereof, 2016.

6. It is proposed to develop a CETP of ultimate capacity of 5.11 MLD on a Modular basis (1.2 MLD initially) and STP of 1.2 MLD capacity. The proposed treatment systems will cater to all the proposed industry needs of Industrial Park and flexible to accommodate all types of effluent anticipated to be generated.

7. The Total power demand for the Phase -1 project area is 92 mVA it is proposed to provide 132/33 kv substations within the project site to cater the industrial, residential, commercial and other requirements. The power will be sourced from the nearest sub-station of APTRANSCO. Estimated Installation Capacity for Solar Power Harness is 18.0 MW.

8. The land classification for the project is Government land which is 599.29 acres, DKT land/assigned land is 1494.05 acres and Patta land is 161.03 acres. Land under water bodies, village site, and road, quarry area which are undeveloped lands in the project area is 392.32 acres and unidentified land in project area is 123.31 acres. An area of 1104.13 acres is in possession of APIIC and comprise of government land transferred and assigned land resumed and remaining land is under process of acquisition. No R&R is proposed for the settlement existing in the project boundary.

9. Benefits of the project: The surrounding population would get maximum benefits from upcoming of new industries and its allied ancillary units in shape of direct and indirect employment, self-employment and start up skill development opportunities. Proposed Industrial Park is likely to generate direct employment of 51215 nos., out of which employ population is 42680 and floating population is 8535 numbers.

10. The EAC during its 243rd meeting on 28-30th September, 2020, taken into account the submissions made by the project proponent M/s Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited that the current proposal only pertains to the Development of Industrial Park (Phase-I) at Srikalahasthi Node situated in villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District

Chittoor, Andhra Pradesh has recommended the proposal for grant of Environmental Clearance subject to fulfilment of specific conditions other than all standard conditions applicable for this project.

11. The Ministry of Environment, Forest and Climate Change has considered the proposal based on the recommendations of the Expert Appraisal Committee (Infrastructure, CRZ and other Miscellaneous projects) and hereby decided to grant Environmental Clearance for the "Development of Industrial Park (Phase-I) at Srikalahasthi Node situated in villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh" under the EIA Notification, 2006 as amended and CRZ Notification 2011, subject to strict compliance of the following specific conditions, in addition to all standard conditions applicable for such projects.

A. SPECIFIC CONDITIONS

(i) To achieve the Zero Liquid Discharge, waste water generated from different industrial operations shall be properly collected, treated to the prescribed standards and then recycled or reused for the identified uses.

(ii) The quantity of fresh water usage, water recycling and rainwater harvesting shall be measured/recorded to ensure the water balance as projected by the project proponent. The record shall be submitted to the Regional Office, MoEF&CC along with six Monthly Monitoring reports.

(iii) All the recommendation of the EMP shall be complied with in letter and spirit.

(iv) The member units shall provide storage tanks for storage of effluent for monitoring the characteristics of effluent before taking into the CETP for further treatment.

(v) Proper meters with recording facilities shall be provided to monitor the effluent quality and quantity sent from member industries to CETP and from CETP to the final disposal/re-use on a continuous basis.

(vi) Ambient noise levels shall conform to the prescribed standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during development/ construction phase. Adequate measures shall be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/SPCB.

(vii) Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on 27th August, 2003 and 25th January, 2016.

(viii) Rain water harvesting for roof run-off and surface run- off, as plan submitted shall be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The bore well for rainwater recharging shall be kept at least 4 mts above the highest ground water table.

(ix) As per the Ministry's Office Memorandum F. No. 22-65/2017-IA.III dated 30th September, 2020, the project proponent shall abide by all the commitments made by them to address the concerns raised during the public consultation. The project proponent shall initiate the activities proposed by them, based on the commitment made in the public hearing, and incorporate in the Environmental Management Plan and submit to the

Ministry. All other activities including pollution control, environmental protection and conservation, R&R, wildlife and forest conservation/protection measures including the NPV, Compensatory Aforestation etc, either proposed by the project proponent based on the social impact assessment and R&R action plan carried out during the preparation of EIA report or prescribed by EAC, shall also be implemented and become part of EMP.

B. STANDARD CONDITIONS:

I. Statutory compliance:

(i) The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report (incase of the presence of schedule-I species in the study area).

(ii) The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of ground water / from the competent authority concerned in case of drawl of surface water required for the project.

(iii) All excavation related dewatering shall be as duly authorized by the CGWA. A NOC from the CGWA shall be obtained for all dewatering and ground water abstraction

(iv) A certificate of adequacy of available power from the agency supplying power to the project along with the load allowed for the project should be obtained.

(v) All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Coast Guard, Civil Aviation Department shall be obtained, as applicable by project proponents from the respective competent authorities.

II. Air quality monitoring and preservation:

(i) The project proponent shall install system to carryout Ambient Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g. PM_{10} and $PM_{2.5}$ in reference to PM emission, and SO_2 and NOx in reference to SO_2 and NOx emissions) within and outside the project area at least at four locations (one within and three outside the plant area at an angle of 120°each), covering upwind and downwind directions.

(ii) Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed emission standards.

(iii) Dust collectors shall be deployed in all areas where surface cleaning and painting operations are to be carried out, supplemented by stacks for effective dispersion.

(iv) Diesel power generating sets proposed as source of backup power should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use of low sulphur diesel. The location of the DG sets may be decided with in consultation with State Pollution Control Board.

(v) A detailed traffic management and traffic decongestion plan shall be drawn up to ensure that the current level of service of the roads within a 05 kms radius of the project is maintained and improved upon after the implementation of the project. This plan should be based on cumulative impact of all development and increased habitation being carried

out or proposed to be carried out by the project or other agencies in this 05 Kms radius of the site in different scenarios of space and time and the traffic management plan shall be duly validated and certified by the State Urban Development department and the P.W.D./ competent authority for road augmentation and shall also have their consent to the implementation of components of the plan which involve the participation of these departments.

III. Water quality monitoring and preservation:

(i) Total fresh water use shall not exceed the proposed requirement as provided in the project details. Prior permission from competent authority shall be obtained for use of fresh water.

(ii) Sewage Treatment Plant shall be provided to treat the wastewater generated from the project. Treated water shall be reused for horticulture, flushing, backwash, HVAC purposes and dust suppression.

(iii) A certificate from the competent authority for discharging treated effluent/ untreated effluents into the Public sewer/ disposal/drainage systems along with the final disposal point should be obtained.

(iv) No diversion of the natural course of the river shall be made without prior permission from the Ministry of Water resources.

IV. Noise monitoring and prevention:

(i) Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.

(ii) Noise from vehicles, power machinery and equipment on-site should not exceed the prescribed limit. Equipment should be regularly serviced. Attention should also be given to muffler maintenance and enclosure of noisy equipments.

(iii) Acoustic enclosures for DG sets, noise barriers for ground-run bays, ear plugs for operating personnel shall be implemented as mitigation measures for noise impact due to ground sources.

(iv) The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.

V. Energy Conservation measures:

(i) Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly;

(ii) Provide LED lights in their offices and project areas.

VI. Waste management:

(i) Necessary arrangements for the treatment of the effluents and solid wastes must be made and it must be ensured that they conform to the standards laid down by the competent authorities including the Central or State Pollution Control Board and under the Environment (Protection) Act, 1986.

(ii) The solid wastes shall be managed and disposed as per the norms of the Solid Waste Management Rules, 2016.

(iii) Any wastes from construction and demolition activities related thereto shall be managed so as to strictly conform to the Construction and Demolition Waste Management Rules, 2016.

(iv) A certificate from the competent authority handling municipal solid wastes should be obtained, indicating the existing civic capacities of handling and their adequacy to cater to the M.S.W. generated from project.

(v) Used CFLs and TFLs should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination.

VII. Green Belt:

(i) An overall green area of at-least 33% of the Industrial Area should be developed with native species. The project proponent of the Industrial Area shall comply with the additional commitment made by them in the EIA report regarding the development of green belt.

(ii) The Industrial Areas are directed to accordingly allocate the area to be developed as green cover to respective individual industrial units so as to achieve the above mentioned condition.

(iii) The individual industrial unit, at the time of obtaining EC, shall bring a letter from the Industrial Area for the area allocated to them to be developed as green cover as a part of obligation from the Industrial Area.

(iv) Wherever possible, plantations around the periphery of the Industrial Area, in the downwind direction and along the road sides shall be provided for containment of pollution and for formation of a screen between the industrial area and the outer civil area. The choice of plants should include shrubs of height 1 to 1.5 m and tree of 3 to 5 m height. The intermixing of trees and shrubs should be such that the foliage area density in vertical is almost uniform.

(v) The parameters like selection of plant species, procedure for plantation, density of tree plantation etc shall be as per the CPCB guidelines.

VIII. Public hearing and human health issues:

(i) Workers shall be strictly enforced to wear personal protective equipments like dust mask, ear muffs or ear plugs, whenever and wherever necessary/ required. Special visco-elastic gloves will be used by labour exposed to hazards from vibration.

(ii) Safety training shall be given to all workers specific to their work area and every worker and employee will be engaged in fire hazard awareness training and mock drills which will be conducted regularly. All standard safety and occupational hazard measures shall be implemented and monitored by the concerned officials to prevent the occurrence of untoward incidents/ accidents.

(iii) Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.

(iv) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

(v) Occupational health surveillance of the workers shall be done on a regular basis.

X. Environment Responsibility:

(i) The company shall have a well laid down environmental policy duly approved by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest /wildlife norms/ conditions.

The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.

(ii) A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly report to the head of the organization.

(iii) Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.

(iv) Self environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.

XI. Miscellaneous:

(i) The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.

(ii) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.

(iii) The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.

(iv) The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.

(v) The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.

(vi) The criteria pollutant levels namely; $PM_{2.5}$, PM_{10}, SO_2, NOx (ambient levels) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

(vii) The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.

(viii) The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.

(ix) The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.

(x) No further expansion or modifications in the Industrial Area shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).

(xi) Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.

(xii) The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

(xiii) The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.

(xiv) The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

(xv) The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.

(xvi) Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

14. This issues with the approval of the Competent Authority.

(Amardeep Raju)
Scientist-E

Copy to:

1. The Principal Secretary, Department of Forests & Environment and Chairman, Govt. of Andhra Pradesh, A.P. Secretariat, Velagapudi, Amaravathi, A.P.
2. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi – 32
3. The Member Secretary, AP Pollution Control Board, Chalamalavari Street, Kasturibaipet, Vijayawada – 520 010.
4. The APCCF (C), Tulja Guda Complex, building, M.J. Market, Hyderabad, (Andhra Pradesh) – 500001
5. Monitoring Cell, MoEF&CC, Indira Paryavaran Bhavan, New Delhi.
6. Guard File/Record File
7. Notice Board.

(Amardeep Raju)
Scientist-E

[Proposal No. IA/AP/NCP/80694/2018]

Appendix 3: Water Allocation

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Water Resources Department – Allocation of 4.55 TMC of water from Kandaleru Reservoir to Andhra Pradesh Industrial Infrastructure Corporation Ltd., (APIIC) for supplying water to Industrial Clusters in Southern Region of AP in Nellore and Chittoor Districts - Permission Accorded – Orders – Issued.

WATER RESOURCES (REFORMS) DEPARTMENT

G.O.MS.No. 43 Dated: 15-03-2019

Read the following:

1. From the Vice Chairman & Managing Director, APIIC, Lr.No.CE-1/APIIC/WD/Gen/2014-15, Dated: 09.12.2018.
2. From the Chief Engineer, NTR TGP, Tirupati Lr.No.CE/ TGP/TPT/DW/ EE1/ DEE1/ AEE2/ Industrial Water/ 187/ dated:11. 03. 2019

****

O R D E R:

In the reference 1st read above, the Andhra Pradesh Industrial Infrastructure Corporation Ltd., (APIIC) has requested to allocate bulk water of 4.55 TMC to prioritized Industrial Clusters in Southern Region of the state with Kandaleru Reservoir as source on daily drawl basis and to permit to draw the allocated water at Km 2.600 on TGP canal (Sankuranthipalle pickup weir) as follows:

S.No	Industrial Cluster	Water Requirement in TMC
1	Krishnapatnam Node	1.91
2	Naidupeta, Nellore District (Naidupeta IP+MPSEZ + Athivaram	0.28
3	Yerpedu-Srikalahasti, Chittoor District (North Block, South Block)	1.78
4	IP, Mambattu, Nellore District	0.07
5	Chinapanduru(Hero Motor Corp & Apollo Tyres)	0.07
6	Sri City, Chittoor	0.43
	Total	**4.55**

2. The Chief Engineer, NTR Telugu Ganga Project, Tirupati in his letter 2nd read above has furnished his report on the proposal of Andhra Pradesh Industrial Infrastructure Corporation Ltd.,(APIIC).

3. Taking into consideration the report of Chief Engineer, NTR Telugu Ganga Project, Tirupati, Government, after careful examination of the matter, hereby accord permission to APIIC to draw 4.55 TMC of water to supply water to Industrial Clusters in Southern Region of the state from Kandaleru Reservoir subject to payment of water royalty charges @ Rs. 5.50 per 1000 gallons as per the Govt. Memo.No.2772/Reforms/A2/2015-1, Water Resources Department, dated: 30.09.2015 and other usual conditions.

4. The Engineer in Chief (Irrigation), Water Resources Department, Vijayawada and Chief Engineer, NTR Telugu Ganga Project, Tirupati shall take necessary action accordingly.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

SHASHI BHUSHAN KUMAR
SECRETARY TO GOVERNMENT

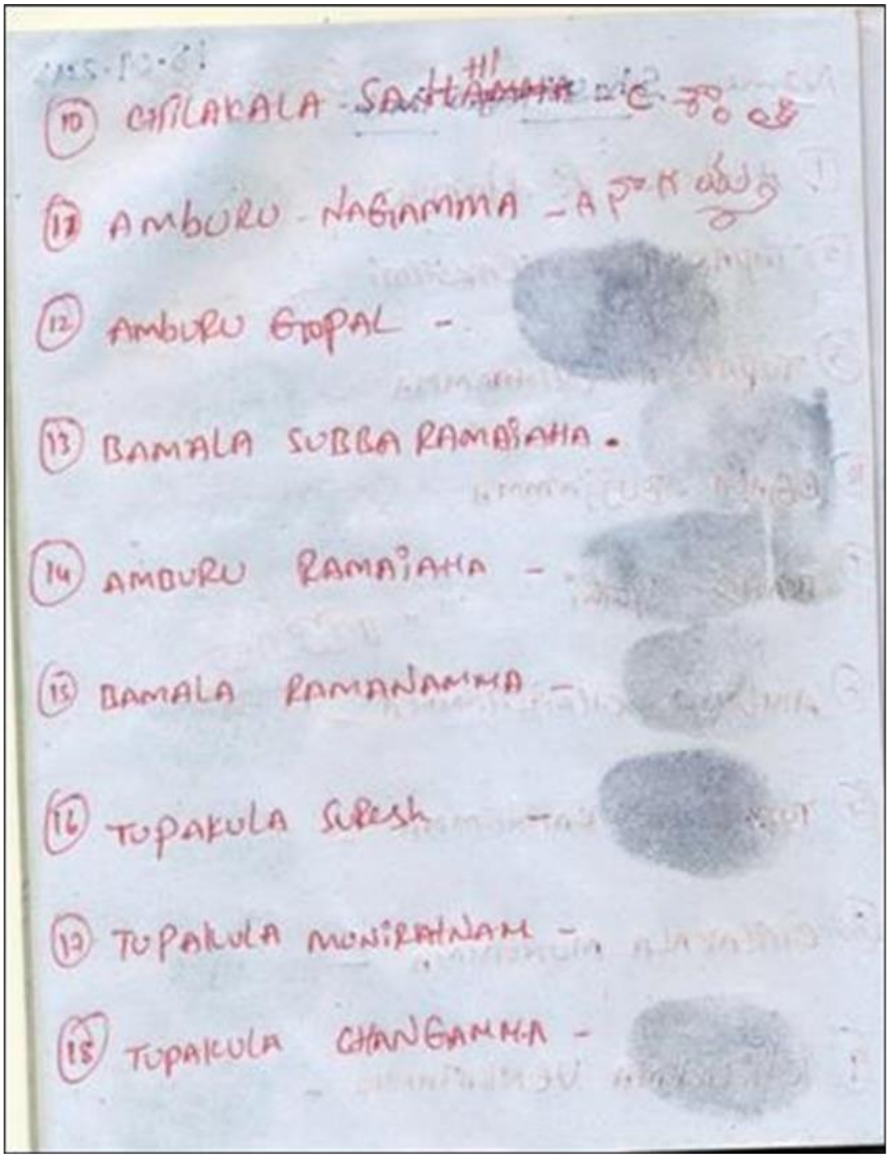
To
The Engineer-in-Chief(Irrigation), Water Resources Department, Andhra Pradesh, Vijayawada.
The Chief Engineer, NTR Telugu Ganga Project, Tirupati.

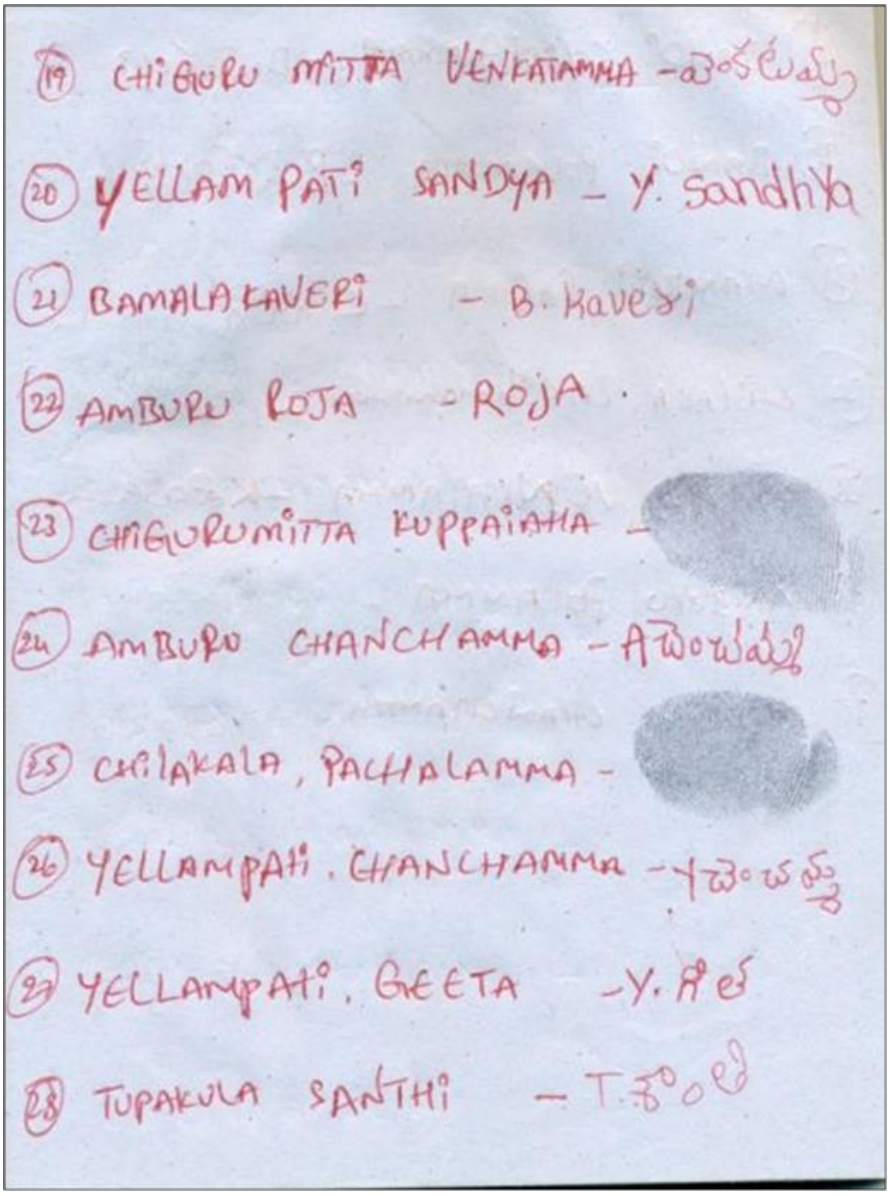
Copy to:
The Vice Chairman & Managing Director, APIIC, Vijayawada.
The PS to Secretary to Government, Industries & Commerce Department, A.P. Secretariat.
The PS to Hon'ble Minister, Water Resources Department.
The PS to Secretary to Government, Water Resources Department.
The Superintending Engineer, SSLC & SB Circle, Nellore.

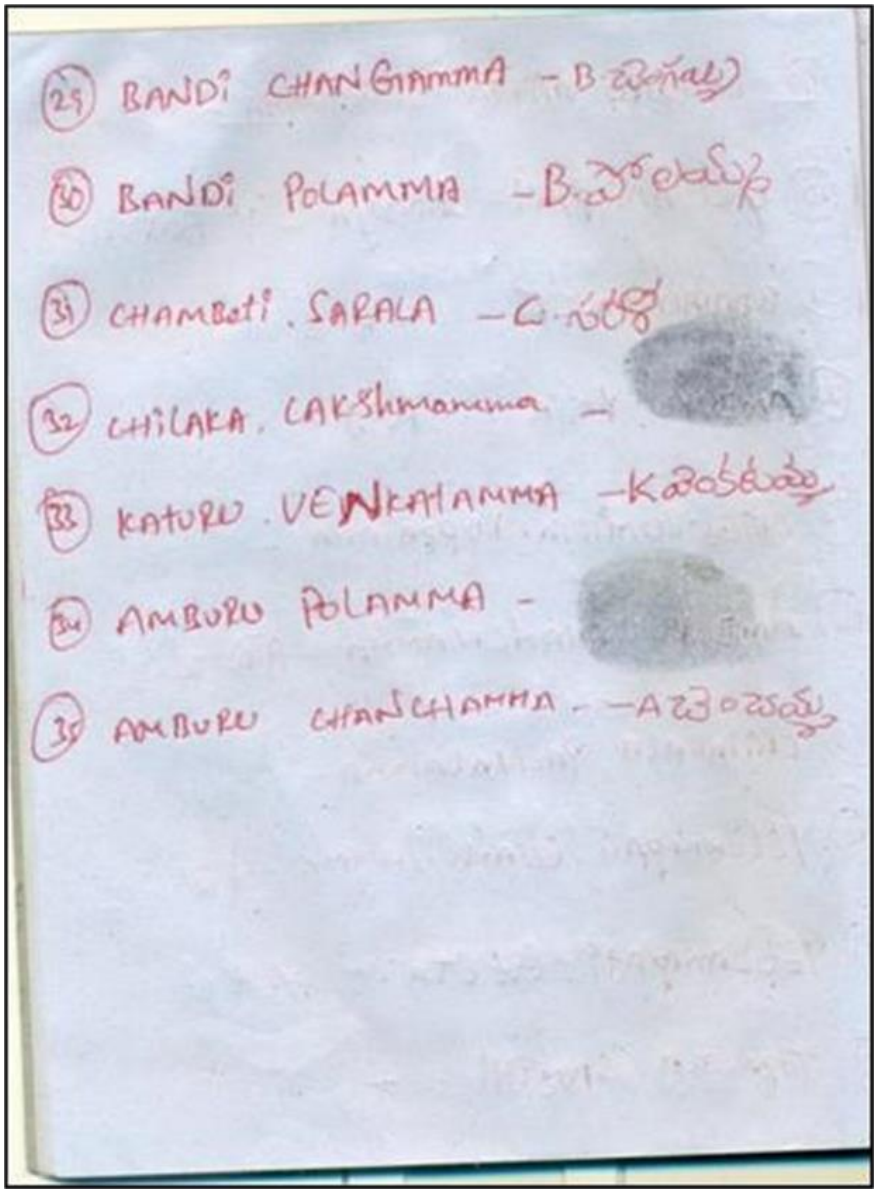
// FORWARDED :: BY ORDER //

SECTION OFFICER

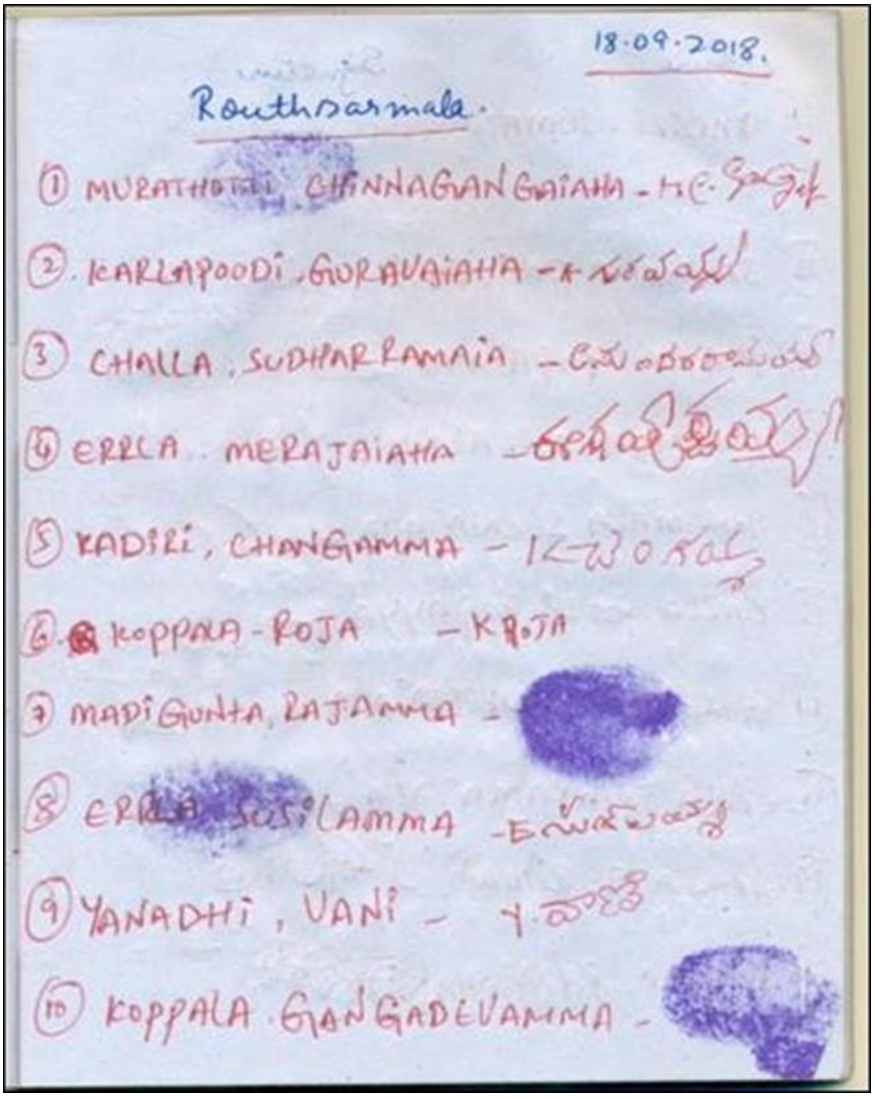
Appendix 4: List of Participants during Social Consultation at Sastriyanadhi Colony




(19) CHIGURU MITTA VENKATAMMA -
(20) YELLAM PATI SANDYA - Y. Sandhya
(21) BAMALA KAVERI - B. Kaveri
(22) AMBURU ROJA - ROJA.
(23) CHIGURUMITTA KUPPAIAHA -
(24) AMBURU CHANCHAMMA -
(25) CHILAKALA, PACHALAMMA -
(26) YELLAMPATI. CHANCHAMMA -
(27) YELLAMPATI. GEETA -Y.
(28) TUPAKULA SANTHI - T.



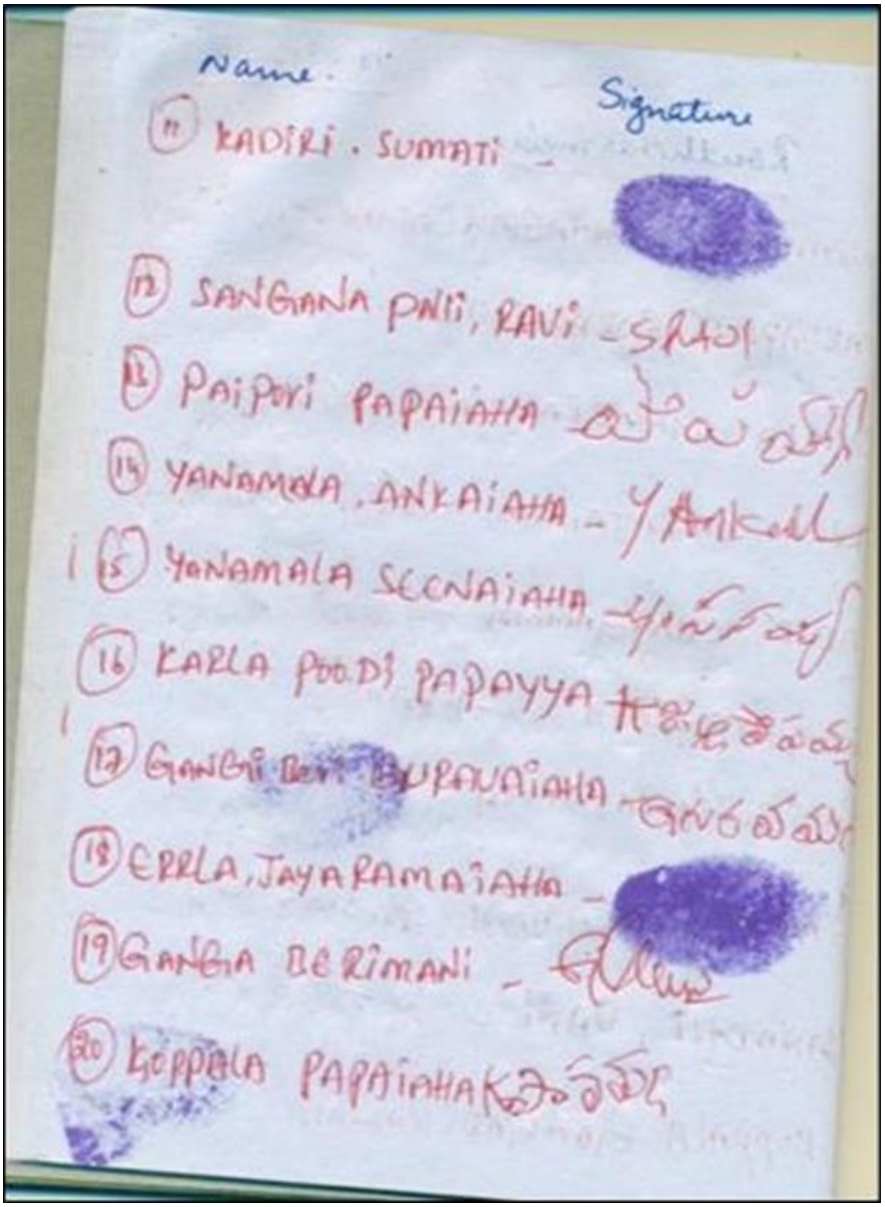
List of participants during social consultation at Routhusuramala

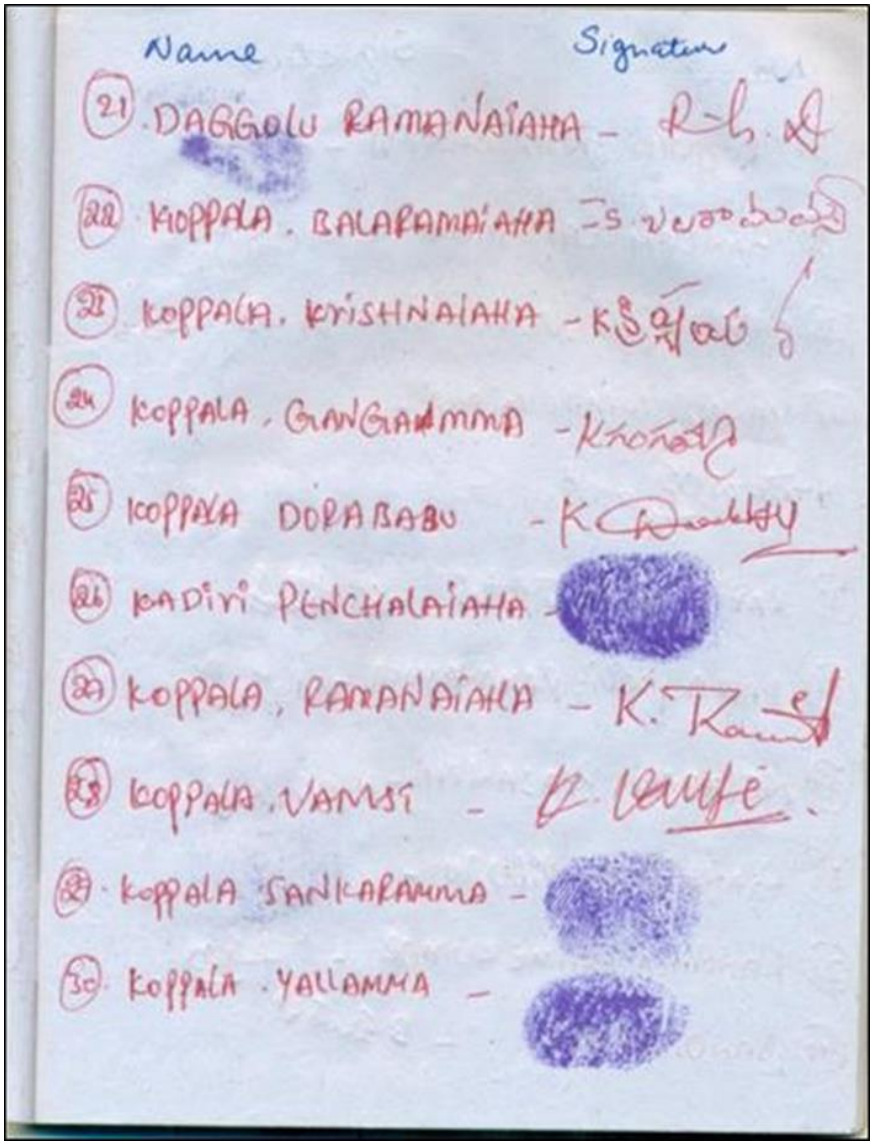


18.09.2018.

Routhsarmala.

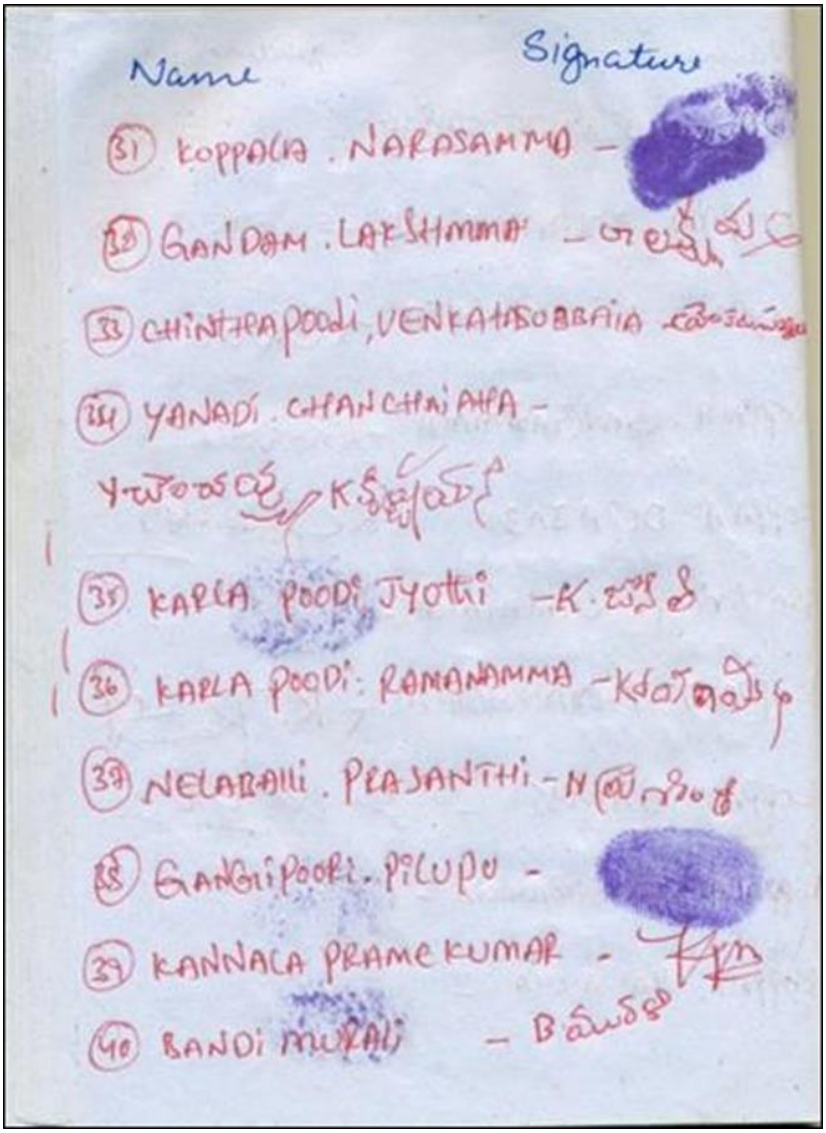
1. MURATHOTLI, CHINNAGANGAIAHA - [illegible]
2. KARLAPOODI, GURAVAIAHA - [illegible]
3. CHALLA, SUDHARRAMAIA - [illegible]
4. ERRLA, MERAJAIAHA - [illegible]
5. KADIRI, CHANGAMMA - [illegible]
6. KOPPALA - ROJA - KROJA
7. MADIGUNTA, RAJAMMA - [illegible]
8. ERR[illegible] SUSILAMMA - [illegible]
9. YANADHI, VANI - [illegible]
10. KOPPALA GANGADEVAMMA - [illegible]



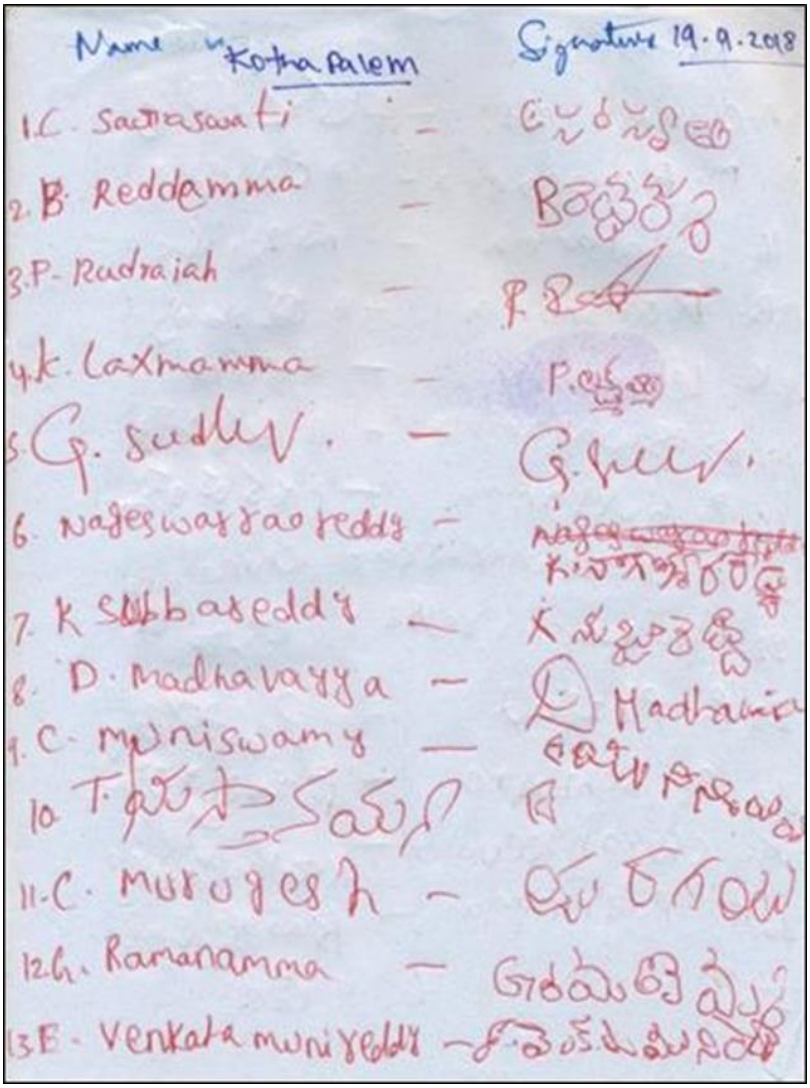


Name Signature

21. DAGGOLU RAMANAIAHA -
22. KOPPALA. BALARAMAIAHA -
23. KOPPALA. KRISHNAIAHA -
24. KOPPALA. GANGAMMA -
25. KOPPALA DORABABU -
26. KADIRI PENCHALAIAHA -
27. KOPPALA, RAMANAIAHA - K. Ra
28. KOPPALA. VAMSI -
29. KOPPALA SANKARAMMA -
30. KOPPALA. YALLAMMA -

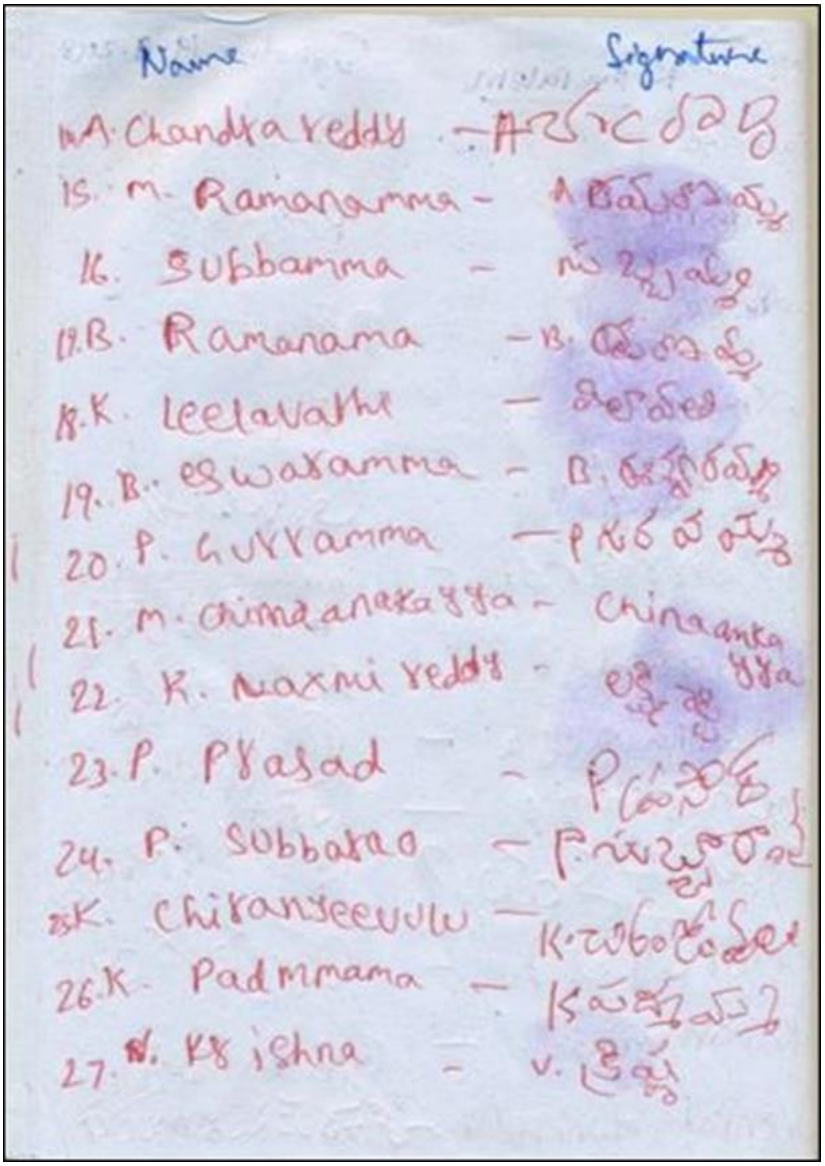


List of participants during social consultation at Kothapalem

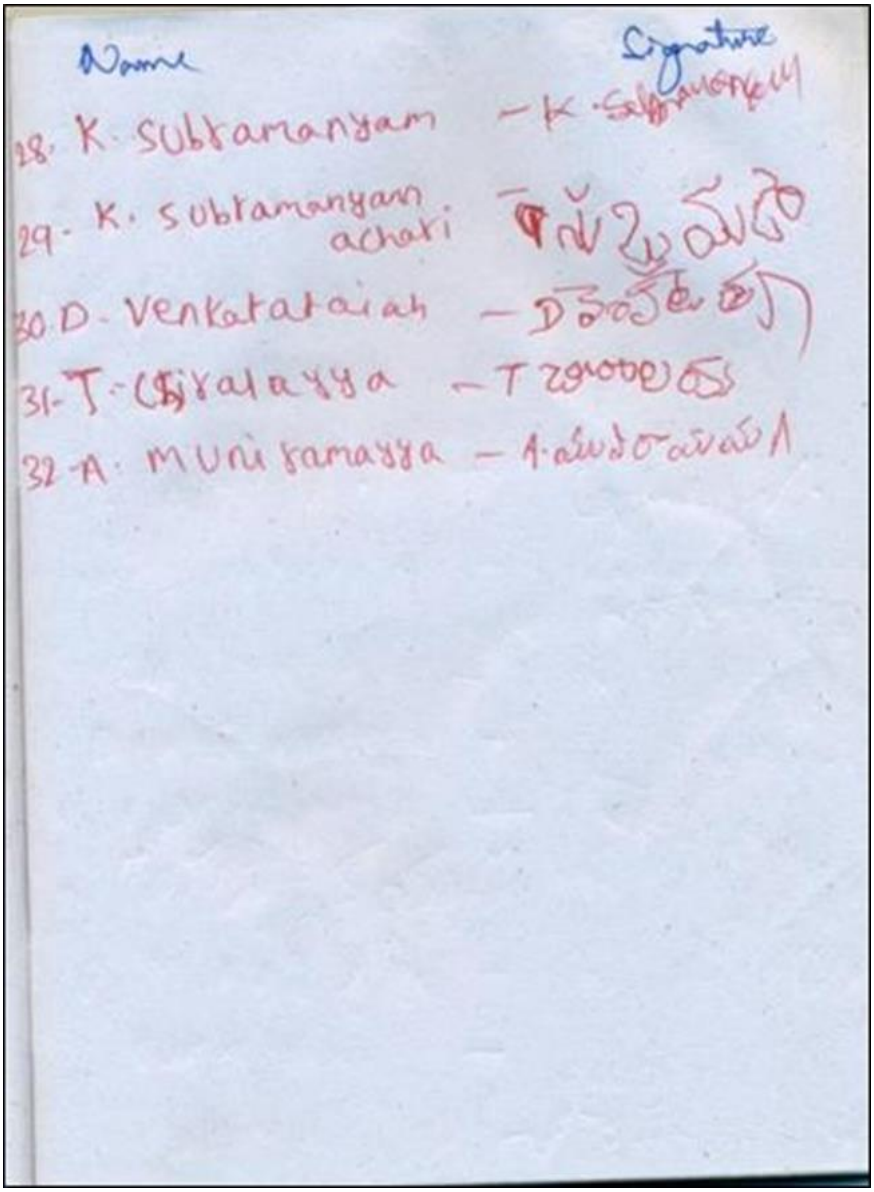


Name "Kotha Palem" Signature 19.9.2018

1. C. Sarasawati –
2. B. Reddamma –
3. P. Rudraiah –
4. K. Laxmamma –
5. G. Sudhir. –
6. Nageswara Rao Reddy –
7. K. Subba Reddy –
8. D. Madhavayya –
9. C. Muniswamy –
10. T. [illegible] –
11. C. Muruges[illegible] –
12. K. Ramanamma –
13. E. Venkata muni Reddy –



	Name	Signature
14.	A. Chandra reddy	
15.	M. Ramaramma	
16.	Subbamma	
17.	B. Ramarama	
18.	K. Leelavathi	
19.	B. Eswaramma	
20.	P. Gurramma	
21.	M. Chinnaneka yya	Chinaanka yya
22.	K. Laxmi reddy	
23.	P. Prasad	
24.	P. Subbarao	
25.	K. Chiranjeevulu	
26.	K. Padmmama	
27.	V. Krishna	



Name Signature

28. K. Subramanyam – K. Subramanyam

29. K. Subramanyam achari – [illegible]

30. D. Venkataraiah – [illegible]

31. T. Sivalayya – [illegible]

32. A. Munisamayya – [illegible]

Appendix 5: Minutes of Public Hearing and Consultations

ANDHRA PRADESH POLLUTION CONTROL BOARD

REGIONAL OFFICE

1st Floor, APSFC Building, Narasimha Theertham Road, TIRUPATI - 517502

D2H(E)

D2H(A-M)

A.NARENDRA BABU,
Environmental Engineer.

Ph.:2253061

OFFICE OF THE ZONAL MANAGER A.P.I.I.C., LTD., TIRUPATI

29 AUG 2020

Lr.No. PH-2/2020/PCB/RO/TPT/2020-~~[illegible]~~ **Dt.:** 17 **-07-2020**

To
Sri. IL. Ram, Zonal Manager,
M/s. Andhra Pradesh Industrial Infrastructure Corporation Ltd (APIIC),
Industrial Estate, Settipalli (post),
Tirupati – 517 506.

Sir,

Sub:- EIA Notification – Public Hearing of **M/s. Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) has proposed for Development of** industrial Park at Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram Revenue Villages of Thottambedu and B.N.Kandriga Mandals, Chittoor district, Andhra Pradesh for an extent of 2770 Acres (1121 Ha) held on 24.07.2020 – Submission of Minutes of the Public Hearing for displaying for reference of the public – Reg.

Ref:- Public Hearing Meeting held on 24.07.2020 at 10.30 AM at the proposed project site.

###

With reference to the above, it is here with submitting the Minutes of the Public Hearing of M/s. Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) has proposed for Development of industrial Park at Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram Revenue Villages of Thottambedu and B.N.Kandriga Mandals, Chittoor district, Andhra Pradesh for an extent of 2770 Acres (1121 Ha) held on 24.07.2020 for displaying at your office for reference of the public.

Submitted for favour of information and taking necessary action.

Yours faithfully,

ENVIRONMENTAL ENGINEER

Encl: Minutes of Public Hearing.

Minutes of the Environmental Public Hearing of M/s. Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) on proposed Industrial park at Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram Revenue Villages of Thottambedu and B.N.Kandriga Mandals, Chittoor district, Andhra Pradesh for an extent of 2770 Acres (1121 Ha) **held on 24.07.2020 at 10.30 am.**

In accordance with the Notification No. S.O. 1533 dt.14.09.2006 of Ministry of Environment & Forests, Government of India, New Delhi, the Environmental Engineer, Andhra Pradesh Pollution Control Board, Regional Office, Tirupati issued a notification pertaining to the Environmental Public Hearing on the proposed industrial park by **M/s. Andhra Pradesh Industrial Infrastructure Corporation Ltd (APIIC)** near at Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram Revenue Villages of Thottambedu and B.N.Kandriga Mandals, Chittoor district, Andhra Pradesh for an extent of 2770 Acres (1121 Ha) in leading newspapers Enadu & Hans India on 23.06.2020 inviting suggestions, views, comments and objections of the general public and the same was conducted on 24.07.2020 at 10.30 am and the minutes of the meeting is as follows:

The following Officials attended the Environmental Public Hearing:

1)	**Sri. N. Rajasekhar**	**District Revenue Officer & Additional District Magistrate** Chittoor Dist. and Chairman of the Environmental Public Hearing Panel.
2)	**Sri. P.V.Kishore Reddy**	**Member Convener &** Environmental Engineer (FAC) APPCB, Regional Office, Tirupati.

The following Departmental Officials attended the hearing:

1) Sri. E.Prathap, General Manager, District Industries Centre.
2) Sri. V.Madana Mohana Reddy, AEE, RO, Tirupati.

Representatives of the Industry:

1) Sri. Prathap Reddy, Executive Director, M/s. Andhra Pradesh Industrial Infrastructure Corporation Ltd (APIIC), Chittoor.
2) Sri. C.Yettiraju, Zonal Manager, M/s. Andhra Pradesh Industrial Infrastructure Corporation Ltd (APIIC), Chittoor.
3) Sri. Subramanyam Namburu, Environmental Consultant of the project, M/s. L&T Infra Engineering Ltd, Hyderabad.

The Environmental Engineer (FAC), A.P. Pollution Control Board, Tirupati welcomed the District Revenue Officer, Chittoor District and the Public gathered at the Public Hearing venue and explained the need to conduct Public Hearing for the project as per the Ministry of Environment & Forests, Govt. of India, New Delhi notification 2006.

He also explained as per the Terms of Reference (TOR), Ministry of Environment, Forest and Climate Change, (Impact Assessment Division) Government of India, New Delhi issued Terms of Reference (TOR) No: F.No. 21-76/2018-IA. III, dt. 04.01.2019 it is necessary to get the public hearing conducted for this type of project for obtaining the Environment Clearance in accordance with the procedure prescribed under the EIA Notification 2006. This proposed project is an industrial park establishing by M/s. APIIC of an extent of 2770 Acres (1121 Ha) for facilitating the upcoming industries. Then the Environmental Engineer (FAC) requested District Revenue Officer & Additional District Magistrate, Chittoor District and Chairman of the Environmental Public Hearing Panel to take over the proceedings of the Environmental Public Hearing.

Then, The District Revenue Officer, Chittoor District and Chairman of the Environmental Public Hearing Panel while speaking on the occasion welcomed the gathering and informed that, M/s. APIIC has acquired an extent of land 2770 Ac at 5 villages located in 2 mandals i.e., Thottambedu & B.N.Kandriga for establishing an industrial park for facilitating

the all kinds of industries. While speaking he also stressed the importance of establishing of eco friendly industries / minimum polluting industries in the interest of surrounding environment. He also informed that pollution control board will continuously monitoring the industries to maintain Environmental standards.

He also informed that, 60% of revenue of our country is getting from the agricultural sector and there is a every need to develop industrial sectors for all-round development of our country. The proposed industrial park of M/s. APIIC is being nearer to Chennai and may attract enthusiastic investors as all the infrastructure facilities are soon available and the logistics. He also brought to the notice about a successful industrial park i.e., SEZ Sricity which is also functioning in Chittoor district at an about of 7000 Ac.

The proposed industrial park may create lot of job opportunities to the surrounding people and may result the improvement of the living standards of surrounding people.

Then the District Revenue Officer, Chittoor District and Chairman of the Environmental Public Hearing Panel requested the public to express their views, suggestions and objections if any on the proposed industrial park after explaining the salient futures of the proposed project by the proponent / environmental consultant of the project.

Then Sri. Subramanyam Namburu, Environmental Consultant of the project, M/s. L&T Infra Engineering Ltd, Hyderabad while explaining the salient features of the proposed project on behalf of the proponent of the project informed to the public that the proposed project is an industrial park of an extent of 2770 Acres (1121 Ha). The proposed project is a part of the Vishakapatnam – Chennai industrial corridor (VCIC). The industries proposed to establish in the proposed industrial park are building material industries / non metallic minerals, Electronics and Consumer Durable industry, Engineering industries (Machinery / Electrical Equipment's / Automobile etc.,), Food and Agro

Processing industry, Apparels and Textiles industry, Chemical and Pharma industry, Logistic and Ware house, MSME (includes Leather, Plastics, Wood etc.,).

The proposed project requires 17.16 MLD of water which is proposed to drawn from Kandaleru River and proposed to generate 5.1 MLD of effluents and sewage of 1.20 MLD. The effluents will be treated Common Effluents Treatment Plant (CETP) with Zero Liquid Discharge (ZLD) facility and sanitary effluents will be treated in STP of 1.2 MLD capacity. The proposed project may generate 15 TPD of MSW and 102 TPD of Hazardous / Non-Hazardous waste. The MSW will be treated as per the MSW Rules and Hazardous waste will be sent to TSDF for further treatment.

The proposed industrial park proposed to develop green belt of an area 387.59 Ac of Greenbelt that works out to be a 13.99% greenbelt overall, remaining about 19.0% of greenbelt will be developed by the individual industries to maintain 33% of greenbelt as per the norms of the Government.

He further informed that, they have collected base line data of surrounding environment i.e., from 10 km radius during the period October 2018 to January 2019, around the project site to assess the impacts arising due to the establishment of Industrial Park. Maximum concentrations of all the parameters viz., PM10, PM2.5, SO2, NO2, etc., are well within the limits as per National Ambient Air Quality Standards (NAAQS). The proponent of the proposed industrial park has also prepared risk analysis, disaster management plan, traffic and transport management plan and social impact assessment.

The proposed industrial park is proposed to spent corresponding CSR budget on surrounding villages and also proposed to spent CER budget of Rs.6.35 Crores on identified activities.

Sri S.Rajendranadh Reddy, Resident of Routhusurumala (V) while speaking on occasion welcomed the proposed project and brought the following to the notice of the Public hearing panel.

1. He requested the authority to establish the more green and MSME industries at the proposed industrial park.
2. He requested the authorities to develop more green belt area adjacent to the existing villages and further requested not to establish any industry adjacent to the villages.
3. Requested not to establish RED category industries adjacent to the villages.
4. Requested to establish a high school at his village and also requested to establish Rural Skill Development centre to train the unemployed youth.
5. Requested to establish primary health centre in co-ordination with DMHO, Chittoor for beneficiary of the surrounding villagers for treating seasonal diseases viz., Malaria, Dengue, Etc.
6. He also requested to establish micro food processing industries for beneficiary of surrounding villages to create employment for women living in the surrounding villages.

Sri Kanta Reddy, Resident of Tallapudi (V) while speaking on occasion welcomed the proposed project and brought to the notice on the committee on cancellation of DKT pattas issued by the Government. He further requested the authorities to provide more job opportunities to the surrounding villages.

Sri V.Ramaiah, Resident of Routhusurumala (V) while speaking on occasion, expressed his unhappy on non providing of job opportunities to the local peoples at the existing industries. He further requested to provide good number of job opportunities in the upcoming industrial park.

Sri K.Venkatesulu, Resident of Alathuru (V) while speaking on occasion, Requested the committee to consider the concerns of his village also along with other villages on the benefits availing due to the establishment of industrial park.

Sri C.Subramanyam, Resident of Gowdamala (V) while speaking on occasion, Requested the committee to short out the technical issues involved in the land alienation and corresponding payments shall be made to the land losers.

Then, Sri. Yettiraju, Zonal Manager, M/s. APIIC answered the following on the concerns raised by the public during the public hearing.

i. Payment will be paid to all the land losers under land acquisition procedure as per the norms of the Governments.
ii. Survey has been completed for an extent of 1075 Ha and payments will be released shortly.
iii. Though the M/s. APIIC is acquiring an extent of 2770 Acres (1121 Ha). But industries will be established at an area of 1300 Acres and remaining land will be meant for roads, Colonies and Green belt development, etc.,
iv. Majority of the jobs will be provided to the surrounding villages as per the norms of the Government.
v. Skill development programme will be conducted.

Then the District Revenue Officer, Chittoor District and Chairman of the Environmental Public Hearing Panel while making the conclusive remarks informed the following.

i. He appreciated the decision of M/s. APIIC on proposal for conducting of Skill development programme for providing job opportunities to women belonging into the surrounding villages.
ii. He informed that, with regard to an extent of 1410 Acres of DKT lands, already an amount of Rs. 42 Crores has paid to the farmers remaining 72 Crores will be paid shortly.
iii. With regard to the cancellation of the Pattas issued to the certain farmers in the year 2011, he informed that the said patta lands should have brought into the use for agricultural purpose within 3

years from the date of issue of the pattas. Those who failed to do this, their pattas might have cancelled.

iv. However, he informed that this issue will take to the notice of the District Collector with the information obtained from local Thasildar and help the farmers as per the land accusation Act.

On seeing no more suggestions / objections from the public the District Revenue Officer, Chittoor District and Chairman of the Environmental Public Hearing Panel, while making the conclusive remakes informed to the public that all the views suggestions expressed during the public hearing meeting will be sent to government for taking decision. Then he concluded the Environmental Public Hearing with a positive note and the public hearing programme was ended with vote of thanks by Asst. Environmental Engineer, APPCB, RO, Tirupati.

Environmental Engineer (FAC)
APPCB, Regional Office,
Tirupati.

District Revenue Officer &
Additional District Magistrate,
Chittoor, Chittoor District

Appendix 6: Government order no GO.RT. No. 163 dated 08-06-2018 for establishment of Grievance Redressal Mechanism

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

VCICDP - Establishment of Project Grievance Redress Mechanism (GRM) at three levels to cover both environmental and social issues - Orders - Issued.

==========

INDUSTRIES AND COMMERCE (INFRA) DEPARTMENT

G.O.RT.No. 163 Dated: 08-06-2018

Read the following:

1. Facility Administrative Manual (FAM) of VCICDP.
2. From the Commissioner of Industries, Vijayawada, 15/1/2014/11427/VCIC-GRM. Dated:31-05-2018

&&&

ORDER:

In the reference 2nd read above, the Commissioner of Industries has stated that at SI. No. 95, Page No. 42 of the Facility Administrative Manual of the VCICDP, the Project Grievance Redress Mechanism (GRM) is envisaged, wherein, it is directed to establish Project GRM at three levels to cover both Environmental and Social issues.

2. The Commissioner of Industries has proposed for establishment of Project Grievance Redress Mechanism at three levels with the following provisions and requested the Government to take a view on the establishment of Project GRM and issue orders:-

a. The GRM shall be established and disclosed to the project affected communities.
b. The Project Grievance Redress Committee, supported by the consultants of PMSC and Safeguard officers of both the PMU and PIUs, will be responsible for timely redress of grievances on Environmental and Social Safeguards issues.
c. The Grievance Redress Committee is also responsible for Registration of Grievances, Related Disclosure and Communication with the aggrieved parties.
d. A complaint register shall be maintained at the field unit, PIU and PMU levels with details of 1. Complaint lodged, 2. Date of Personal Hearing, 3. Action Taken and 4. Date of communication sent to the complainant.
e. Contact Details, Procedure and Complaint Mechanism shall be disclosed to the Project Affected Communities at accessible locations and through various Media (Leaflets, Newspapers etc.,)

3. Government after careful examination of the proposal, hereby establish the Project Grievance Redress Mechanism at three levels is as follows:-

1st Level Grievance:

The Contact Number of the PIU office should be made available at the construction site signboards. The contractor and field unit staff can immediately resolve onsite, seek the advice of the PIU Safeguard Manager as required, within seven (7) days of receipt of the complaint / grievance.

2nd Level Grievance:

All grievances that could not be redressed within seven (7) days at Field / Ward level shall be reviewed by the GRC at District Level headed by Joint Collector of the respective District. GRC shall attempt to resolve them within fifteen (15) Days. The Safeguard Manager of the PIU shall be responsible to see through the process of redressal of each grievance.

(P.T.O)

3rd Level Grievance:

All grievances that cannot be redressed within fifteen (15) days at District Level shall be reviewed by the Grievance Redressal Committee (GRC) at State Level headed by the Project Director, VCICDP PMU, with support from District GRC, PMU, Social Safeguards and Gender Officer (SSGO), Environmental Safeguard Officer of PMU. Environmental and Social Safeguard Specialists of PMSC shall coordinate the GRC to ensure that the grievances be resolved within fifteen (15) days. The SSGO of PMU shall be responsible to see through the process of redressal of each grievance pertaining to the Social Safeguards

4. Government hereby constitute the Grievance Redressal Committee (GRC) at District level with the following composition:

1.	Joint Collector of the Concerned District	Chairman
2.	Project Engineer of the concerned field unit	Member Secretary
3.	Revenue Divisional Officer (RDO) or sub-collector of the division	Member
4.	Project Director, DRDA	Member
5.	Chief Executive Officer, Zilla Parishad	Member
6.	District Panchayat Officer	Member
7.	District Education Officer	Member
8.	District Medical and Health Officer	Member
9.	District level representative of DISCOM	Member
10.	Superintendent Engineer, RWS Panchayat Raj Department	Member
11.	Three members from affected persons, with at least one of them a woman DP	Member
12.	Team Leader of the resettlement plan implementation support NGO or Agency	Member

5. The functions of the Grievance Redressal Committee (GRC) at District level are as follows:

a) GRC at District Level shall receive, evaluate and facilitate the resolutions of displaced person's concerns, complaints and grievances.
b) The GRC shall provide an opportunity to the affected persons to have their grievances redressed prior to approaching the State Level LARR Authority, constituted by the GoAP in accordance with Section 51 (1) of the RFCTLARR Act, 2013.
c) The GRC is aimed to provide a trusted way to voice and resolve concerns linked to the project, and to be an effective way to address displaced person's concerns without allowing it to escalate resulting in delays in project implementation.
d) The GRC shall meet once in every month and review and redress any grievances / complaints. Periodical monthly reports shall be submitted to the Project Director, VCICDP PMU in the prescribed proforma.

//Countd.p.3//

-3-

e) The GRC will continue to function, for the benefit of the displaced persons, during the entire life of the project including the defects liability period. The entire resettlement component of the project has to be completed before the construction starts, and pending grievances resolved. Other than disputes relating to ownership rights and apportionment issues on which the LARR Authority has jurisdiction.
f) GRC will review grievances involving all resettlement benefits, relocation and payment of assistances.
g) The GRCs will function out of each district where the subprojects are being implemented. The existing setup for coordination, monitoring and grievance redress at district level which meets once a month, will be used for VCICDP.
h) An annual fund of Rs.1.00 Lakhs shall be allocated to each GRC for their operations like convening monthly review meetings, preparing and distributing broachers, leaflets etc.

6. The Project Director, PMU, VCICDP shall be the Appellate Authority and shall be supported by the Safeguards Officer of PMU, VCICDP and the Team Leader of PMSC. This shall be the highest Grievance Redressal Mechanism at the project level.

7. The Project Monitoring Unit (PMU), Project Implementing Units (PIUs) and Grievance Redressal Committees (GRCs) shall update the status of complaints / grievances in the VCIC Web-Site.

5. The Project Director, PMU, VCICDP shall take further necessary action in the matter, accordingly.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

S.SOLOMON AROKIARAJ
SECRETARY TO GOVERNMENT & CIP

To
The Project Director, Project Monitoring Unit, VCICDP, Vijayawada.
The Chairman and all the members through PD, PMU, Vijayawada.
Copy to:
The District Collectors, Visakhapatnam, East Godavari, Krishna and SPS Nellore.
P.S. to Minister for Industries
P.S. to Prl. Secretary to CM (GSP)
Sc/Sf

//FORWARDED BY: ORDER//

SECTION OFFICER

Appendix 7: Ambient Air Quality Standards

S. No	Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)	
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO_2), µg/m^3	Annual*	50	20	• Improved West and Geake • Ultraviolet fluorescence
		24 hours**	80	80	
2.	Nitrogen Dioxide (NO_2), µg/m3	Annual*	40	30	• Modified Jacob & Hochheiser (Na-Arsenite) • Chemiluminescence
		24 hours**	80	80	
3.	Particulate Matter (size less than 10 µm) or PM_{10}µg/m^3	Annual*	60	60	• Gravimetric • TOEM • Beta attenuation
		24 hours**	100	100	
4.	Particulate Matter (size less than 2.5 microns) or $PM_{2.5}$ µg/m^3	Annual*	40	40	• Gravimetric • TOEM • Beta attenuation
		24 hours**	60	60	
5.	Ozone (O3) µg/m3	8 hours**	100	100	• UV photometric • Chemiluminescence • Chemical method
		1 hour**	180	180	
6.	Lead (Pb) µg/m^3	Annual*	0.5	0.5	• ASS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	
7.	Carbon Monoxide (CO) mg/m^3	8 hours**	2	2	Non Dispersive Infra RED (NDIR) Spectroscopy
		1 hour**	4	4	
8.	Ammonia (NH_3) µg/m^3	Annual*	100	100	• Chemiluminescence • Indophenol blue method
		24 hours**	400	400	
9.	Benzene (C_6H_6) µg/m^3	Annual*	5	5	• Gas chromatography based continuous analyser • Adsorption and desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP) – particulate phase only ng/m^3	Annual*	1	1	Solvent extraction followed by HPLC / GC analysis
11.	Arsenic (As) ng/m^3	Annual*	6	6	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni) ng/m^3	Annual*	20	20	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic means of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored value, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

Appendix 8: Ambient Noise Standards

Area Code	Category of Zones	Limits of Leq in dB(A)	
		Day time*	Night time*
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence Zone **	50	40

Note: -

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

*dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A “decibel” is a unit in which noise is measured.

“A”, in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.

Appendix 9: Drinking Water Standards (IS10500:2012)

S. No.	Parameter	Unit	Requirement (Acceptable Limit)	Permissible Limit in Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
1	Colour (Max)	Hazen	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
2	Odour	--	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
3	Taste	--	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
4	Turbidity (Max)	NTU	1	5	Part 10	--
5	pH	--	6.5 to 8.5	No Relaxation	Part 2	--
6	Temperature	^{O}C	--	--	--	--
7	Electrical conductivity	µ mhos/cm	--	--	--	--
8	Salinity	ppt	--	--	--	--
9	Total solids	mg/l	--	--	--	--
10	Total Hardness as CaCO3 (Max)		200	600	Part 21	--
11	Total Alkalinity as Calcium Carbonate (Max)		200	600	Part 23	--
12	Iron as Fe (Max)		0.3	No Relaxation	Part 53	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
13	Chlorides as Cl (Max)		250	1000	Part 32	
14	Free Residual Chlorine (Min)		0.2	1	Part 26	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
15	Total dissolved solids (Max)		500	2000	Part 16	--
16	Calcium as Ca (Max)		75	200	Part 40	--
17	Magnesium as Mg (Max)		30	100	Part 46	--
18	Copper as Cu (Max)		0.05	1.5	Part 42	--
19	Manganese as Mn (Max)		0.1	0.3	Part 59	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
20	Sulphate as SO4 (Max)		200	400	Part 24	May be extended to 400 provided that Magnesium does not exceed 30
21	Nitrate as NO3 (Max)	mg/l	45	No Relaxation	Part 34	--
22	Fluorides as F (Max)		1	1.5	Part 60	--

S. No.	Parameter	Unit	Requirement (Acceptable Limit)	Permissible Limit in Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
23	Sodium as Na		--	--	--	--
24	Potassium as K		--	--	--	--
25	Total Nitrogen		--	--	--	--
26	Total phosphorous		--	--	--	--
27	Free Ammonia as NH4		--	--	--	--
28	Phenolic compounds as C6H5OH (Max)		0.001	0.002	Part 43	--
29	Biochemical oxygen demand		--	--	--	--
30	Chemical oxygen demand		--	--	--	--
31	Dissolved oxygen		--	--	--	--
32	Mercury as Hg (Max)		0.001	No Relaxation	Part 48(1) Mercury analyser	--
33	Cadmium as Cd (Max)		0.003	No Relaxation	Part 4 (I)	--
34	Selenium as Se (Max)		0.01	No Relaxation	IS 3025 (Part 56) or IS 15303*	In case of dispute, the method indicated by ,*, shall be the referee method
35	Arsenic as As (Max)		0.01	0.05	Part 37	--
36	Cyanides as CN (Max)		0.05	No Relaxation	Part 27	--
37	Lead as Pb (Max)		0.01	No Relaxation	Part 47	--
38	Zinc as Zn (Max)		5	15	Part 49	--
39	Anionic detergent as MBAS (Max)		0.2	1	Annex K of IS 13428	--
40	Chromium as Cr^{6+} (Max)		0.05	No Relaxation	Part 52	--
41	Total coli forms	MPN/100 ml	Shall not be Detectable in any 100 ml sample		IS 1622	--
42	Faucal coli forms					--
It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 5, above which the sources will have to be rejected						

Appendix 10: Surface Water Standards

Tolerance and Classification

As per ISI-IS: 2296-1982, the tolerance limits of parameters are specified as per classified use of water (Table 1,2,3,4,5 below) depending on various uses of water. The following classifications have been adopted in India.

Class of Water

Classification	Type of use
Class A	Drinking water source without conventional treatment but after disinfection
Class B	Outdoor bathing
Class C	Drinking water source with conventional treatment followed by disinfection.
Class D	Fish culture and wild life propagation
Class E	Irrigation, industrial cooling or controlled waste disposal

TOLERANCE LIMITS

TABLE-1: TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – A

S. No.	Characteristic	Tolerance
(1)	(2)	(3)
(i)	pH	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l,	6
(iii)	Bio-chemical Oxygen Demand	2
(iv)	Total Coliform Organisms, MPN/100 ml, Max	50
(v)	Colour, Hazen units, Max	10
(vi)	Odour	unobjectionable
(vii)	Taste	Agreeable taste
(viii)	Total Dissolved Solids, mg/l, Max	500
(ix)	Total Hardness (as $CaCO_3$), mg/l, Max	300
(x)	Calcium Hardness (as $CaCO_3$), mg/l, Max	200
(xi)	Magnesium (as $CaCO_3$), mg/1, Max	100
(xii)	Copper (as Cu), mg/l, Max	1.5
(xiii)	Iron (as Fe), mg/l,Max	0.3
(xiv)	Manganese (as Mn), mg/1, Max	0.5
(xv)	Chlorides (as Cl), mg/l,Max	250
(xvi)	Sulphate (as SO_4), mg/l, Max	400
(xvii)	Nitrates (as NO_2), mg/1, Max	20
(xviii)	Fluorides (as F,) mg/l,Max	1.5
(xix)	Phenolic compounds (as C6H5OH), mg/l,Max	0.002
(xx)	Mercury (as Hg), mg/l, Max	0.001
(xxi)	Cadmium (as Cd), mg/1, Max	0.01
(xxii)	Selenium (as Se), mg/l, Max	0.01
(xxiii)	Arsenic (as As), mg/1, Max	0.05
(xxiv)	Cyanides (as CN), mg/l, Max	0.05
(xxv)	Lead (as Pb), mg/l, Max	0.1
(xxvi)	Zinc (as Zn), mg/l, Max	15
(xxvii)	Chromium (asCr^{6+}), mg/l,Max	0.05
(xxviii)	Anionic detergents, (as MBAS), mg/l, Max.	0.2
(xxix)	Poly-nuclear aromatic hydrocarbons (PAH),	0.2
(xxx)	Mineral oil, mg/l, Max	0.01
(xxxi)	Barium (as Ba), mg/l, Max	1
(xxxii)	Silver (as Ag), mg/l Max	0.05
(xxxiii)	Pesticides	Absent
(xxxiv)	Alpha emitters, µc/ml, Max	10^{-9}
(xxxv)	Beta emitters, µc/ml, Max	10^{-8}

TABLE- 2: TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – B

S. No	Characteristic	Tolerance Limit
(1)	(2)	(3)
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/1, Max	5
(iii)	Biochemical Oxygen Demand (5 days at 20 °C), Max	3
(iv)	Total Coliform Organisms, MPN/100 ml, Max	500
(v)	Fluorides (as F) <mg/l, Max	1.5
(vi)	Colour, Hazen units, Max	300
(vii)	Cyanides (as CN), mg/l, Max	0.05
(viii)	Arsenic (as As), mg/l, Max	0.2
(ix)	Phenolic Compounds (as C6H5OH) mg/l, Max	0.005
(x)	Chromium (as Cr^{6+}), mg/l, Max	1
(xi)	Anionic detergents (as MBAS), mg/l, Max	1
(xii)	Alpha emitters, µc/ml, Max	10^{-8}

TABLE – 3: TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – C

S. No.	Characteristic	Tolerance Limit
(1)	(2)	(3)
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l Minimum	4
(iii)	Biochemical Oxygen Demand	3
(iv)	Total coliform organisms, MPN/100 ml, Max	5000
(v)	Colour, Hazen units, Max	300
(vi)	Fluorides (as F), mg/l, Max	1.5
(vii)	Cadmium (as Cd), mg/l, Max	0.01
(viii)	Chlorides (as Cl), mg/l, Max	600
(ix)	Chromium (as Cr^{6+}), mg/l, Max	0.05
(x)	Cyanides (as CN), mg/l, Max	0.05
(xi)	Total Dissolved Solids, mg/l, Max	1500
(xii)	Selenium (as Se), mg/l, Max	00.5
(xiii)	Sulphates (as SO_4), mg/l, Max	400
(xiv)	Lead (as Pb), mg/l, Max	0.1
(xv)	Copper (as Cu), mg/l,Max	1.5
(xvi)	Arsenic (as As), mg/l, Max	0.2
(xvii)	Iron (as Fe), mg/l, Max	50
(xviii)	Phenolic compounds (as C_6H_5OH), mg/l, Max	0.005
(xix)	Zinc (as Zn), mg/l, Max	15
(xx)	Insecticides, mg/l, Max	Absent
(xxi)	Anionic detergents (as MBAS), mg/l, Max	1
(xxii)	Oils and grease, mg/l, Max	0.1
(xxiii)	Nitrates (as NO_3), mg/1, Max	50
(xxiv)	Alpha emititers, µc/mg, Max	10^{-9}
(xxv)	Beta emitters, µc/ml, Max	10^{-8}

TABLE- 4: TEOLERANCE LIMITS FOR INLAND SURFACE WATERS, CALSS – D

S. No.	Characteristic	Tolerance Limit
(1)	(2)	(3)
(i)	pH value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l, Min.	4
(iii)	Free Ammonia (as N), mg/l, Max.	1.2
(iv)	Electrical Conductance at 25 °C, µS, Max	1000
(v)	Free Carbon Dioxide (as C02), mg/1, Max	6
(vi)	Oils and Grease, mg/l, Max	0.1
(vii)	Alpha emitters, µc/ml, Max	10-9
(viii)	Beta emitters, µc/ml, Max	10-8

TABLE- 5: TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – E

S. No.	Characteristic	Tolerance Limit
(1)	(2)	(3)
(i)	pH value	6.0 to 8.5
(ii)	Electrical Conductance at 25°C, µS, Max	2250
(iii)	Sodium Adsorption Ratio, Max	26
(iv)	Boron (as B), mg/l, Max	2
(v)	Total Dissolved Solids, (inorganic), mg/l, Max	2100
(vi)	Sulphates (as SO4), mg/l, Max	1000
(vii)	Chlorides (as Cl), Mg/l, Max	600
(viii)	Sodium Percentage, Max	60
(ix)	Alpha emitters, µc/ml, Max	10-9
(x)	Beta emitters, µc/ml, Max	10-8

Appendix 11: Soil Standards

S. No	Soil Tests	Classification
1.	pH	<4.50 extremely acidic 4.51 -5.00 very strongly acidic 5.01 – 5.50 Strongly acidic 5.51 – 6.00 moderately acidic 6.01 – 6.50 Slightly acidic 6.51 – 7.30 neutral 7.31 – 7.80 Slightly alkaline 7.81 – 8.50 moderately alkaline 8.51 – 9.00 Strongly alkaline 9.01 Very strongly alkaline
2.	Salinity Electrical Conductivity (mmhos/cm) (1 mmho/cm = 640 ppm)	Upto 100 average 101 – 200 harmful to germination 201 – 300 harmful to crops (Sensitive to salts)
3.	Organic Carbon	Upto 0.2 : Very less 0.21 – 0.4 : less 0.41 – 0.5 : medium 0.51 – 0.8 : On an average sufficient 0.81 – 1.0 : Sufficient > 1.0 : More than sufficient
4.	Nitrogen (kg/ha)	Upto 59 very less 51 – 100 less 101 – 150 good 151 – 300 better Above 300 sufficient
5.	Phosphorus (kg/ha)	Upto 15 very less 16 – 30 less 31 – 50 medium 51 – 65 on an average sufficient 66 – 80 Sufficient Above 80 more than sufficient
6.	Potassium (kg/ha)	0 – 120 very less 120 – 180 less 181 – 240 medium 241 – 300 average 301 – 360 better Above 360 more than sufficient

Source: Indian Council of Agricultural Research, New Delhi

Appendix 12: Emission Standards for Diesel Engines (Engine Rating More Than 0.8 Mw (800 Kw) For Power Plant, Generator Set Applications and Other Requirements

(Emission Standards for Diesel Engines (Engine Rating more than 0.8 MW (800 KW) were notified by the Environment (Protection) Third Amendment Rules 2002, vide G.S.R. 489 (E), dated 9thJuly, 2002 at serial no. 96, under the Environment (Protection) Act, 1986.)

EMISSION STANDARDS FOR DIESEL ENGINES (ENGINE RATING MORE THAN 0.8 MW (800 KW)) FOR POWER PLANT, GENERATOR SET APPLICATIONS AND OTHER REQUIREMENTS

Parameter		Area Category	Total engine rating of the plant (includes existing as well as new generator sets)	Generator sets commissioning date		
				Before 1.7.2003	Between 1.7.2003 and 1.7.2005	On or after 1. 7. 2005
NOx (as NO_2) (AT 15% O_2) , dry basis, in ppmv		A	Upto 75 MW	1100	970	710
		B	Upto 150 MW			
		A	More then 75 MW	1100	710	360
		B	More then 150 MW			
NMHC (as C) (at 15% O_2), mg/Nm^3		Both A and B		150	100	
PM (at 15% O_2), mg/Nm^3	Diesel Fuels- HSD & LDO	Both A and B		75	75	
	Furnace Oils- LSHS & FO	Both A and B		150	100	
CO (at 15% O_2), mg/Nm^3		Both A and B		150	150	
Sulphur Content in fuel		A		< 2%		
		B		< 4%		
Fuel specification		For A only	Up to 5MW	Only Diesel fuels (HSD, LDO) shall be used.		
Stack height (for generator sets commissioned after 1.7.2003)		Stack height shall be maximum of the following, in meter: (i) 14 $Q^{0.3}$, Q= Total SO_2 emission from the plant in kg/hr. (ii) Minimum 6 m. above the building where generator set is installed. (iii) 30 m.				

Appendix 13: General Standards for Discharge of Environmental Pollutants Part-A: Effluents

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1	Colour and odour	See 6 of Appendix 9	--	See 6 of Appendix 9	See 6 of Appendix 9
2	Suspended solids mg/l, Max.	100	600	200	(a) For process wastewater- 100 (b) For cooling water effluent 10 percent above total suspended matter of influent.
3.	Particulate size of suspended solids	Shall pass 850 micron IS Sieve	--	--	(a) Floatable solids, max. 3 mm. (b) Settleable solids, max. 850 microns
[2]4.	***	*	--	***	--
5.	pH Value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	shall not exceed 5°C above the receiving water temperature	--	--	shall not exceed 5°C above the receiving water temperature
7.	Oil and grease mg/l Max.	10	20	10	10
8.	Total residual chlorine mg/l Max.	1.0	--	--	1.0
9.	Ammonical nitrogen (as N), mg/l Max.	50	50	--	50
10.	Total Kjeldahl Nitrogen (as NH_3) mg/l, Max.	100	--	--	100
11.	Free ammonia (as NH_3) mg/l, Max.	5.0	--	--	5.0
12.	Biochemical Oxygen demand 1[3 days at 27°C] mg/l max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l, max.	250	--	--	250
14.	Arsenic (as As), mg/l, max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg), mg/l, Max.	0.01	0.01	--	0.01
16	Lead (as Pb) mg/l, Max.	0.1	1.0	--	2.0
17.	Cadmium (as Cd) mg/l, Max.	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr^{+6}), mg/l max.	0.1	2.0	--	1.0
19.	Total chromium (as Cr.) mg/l, Max.	2.0	2.0	--	2.0
20.	Copper (as Cu) mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (As Zn.) mg/l, Max.	5.0	15	--	15
22.	Selenium (as Se.) mg/l, Max.	0.05	0.05	--	0.05
23.	Nickel (as Ni) mg/l, Max.	3.0	3.0	--	5.0
[2]24.	* * * * * * *				
[2]25.	* * * * * * *				

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
[2]26.	* * * * * * *				
27.	Cyanide (as CN) mg/l Max.	0.2	2.0	0.2	0.2
[2]28.	* * * * * * *				
29.	Fluoride (as F) mg/l Max.	2.0	15	--	15
30.	Dissolved Phosphates (as P), mg/l Max.	5.0	--	--	--
[2]31.	* * * * * * *				
32.	Sulphide (as S) mg/l Max.	2.0	--	--	5.0
33.	Phenoile compounds (as C6H5OH) mg/l, Max.	1.0	5.0	--	5.0
34.	Radioactive materials:				
	(a) Alpha emitter micro curie/ml.	10-7	10-7	10-8	10-7
	(b) Beta emitter micro curie/ml.	10-6	10-6	10-7	10-6
35.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36.	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
37.	Iron (as Fe)	3 mg/l	3 mg/l	--	3 mg/l
38.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
39.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l
[2]40.	* * * * * * *				

[1] Schedule VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R. 422(E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.

[2] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

Appendix 14: Rapid Environmental Assessment (REA) Checklist

Instructions:

- This checklist cis to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation and (v) gender and development.
- Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:	Visakhapatnam Chennai Industrial Corridor Development Program (VCICDP) Srikalahasti node – South block (Start-Up Area)
Sector Division:	SAUW, SARD

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
Is the project area…			
• Densely populated?	☐	✓	
• Heavy with development activities?	☐	✓	
• Adjacent to or within any environmentally sensitive areas?	☐	✓	
• Cultural heritage site	☐	✓	
• Protected Area	☐	✓	
• Wetland	☐	✓	
• Mangrove	☐	✓	
• Estuarine	☐	✓	
• Buffer zone of protected area	☐	✓	
• Special area for protecting biodiversity	☐	✓	
• Bay	☐	✓	
B. Potential Environmental Impacts			
• interference with other utilities and blocking access to buildings; nuisance areas due to noise and odor?	☐	✓	
• Impairment of historical/cultural monuments/areas and loss/damage to these sites?	☐	✓	
• dislocation or involuntary resettlement of people	☐	✓	Proposed to relocate Sastriyanadi Colony after

SCREENING QUESTIONS	Yes	No	REMARKS
			the consent from people.
• social conflicts between construction workers and local community workers?	☐	✓	
• noise and dust from construction activities?	✓	☐	Noise/dust mitigation measure such as acoustic enclosures, water sprinkling etc., will be provided
• air pollution resulting from emissions from production process, accidents, and poor equipment maintenance?	✓	☐	Each industry will have its own air pollution control measures and emissions and stack height within permissible limits of APPCB/CPCB will be maintained.
• pollution of water bodies and aquatic ecosystem resulting from production wastes, utility operations, sanitary sewage, and miscellaneous discharges?	☐	✓	ZLD is proposed for the Wastewater and Adequate SWM is proposed for the Solid waste.
• Contamination of soil and groundwater from solid wastes from water treatment sludges, cafeteria or lunchroom wastes, ashes and incineration residues, etc.?	☐	✓	No solid waste or sludge will be dumped in and near project site. It will be sent MSW disposal site and industrial waste to nearby TSDF.
• Public health and safety hazards due to air pollution and possible groundwater contamination?	☐	✓	Considering the mitigation measures proposed no contamination is envisaged.
• Road blocking and/or increased traffic during construction of facilities	☐	✓	Existing road network will be adequate to handle the generated traffic during construction
• Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?	☐	✓	No Discharge outside premises is envisaged
• Contamination of surface and ground waters due to improper waste disposal?	☐	✓	ZLD is proposed for the Wastewater and Adequate SWM is proposed for the Solid waste

Appendix 15: Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector:

Subsector:

Division/Department:

Screening Questions		Score	Remarks[20]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	0	
	Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Material s and Maintenance	Would weather, current and likely future climate conditions (e.g., prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro- meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g., construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g., annual power production) of project output(s) (e.g., hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): _____ Low_____

[20] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Other

Comments: _____

Prepared by: _____

Appendix 16: Records of Public Consultation

The following table is the suggested format for recording the minutes of the public consultations conducted for the project.

Date and Venue of Public Consultation	Number of attendees	Issues /concerns raised during the public consultation	Response of the EA/IA on how to address the issues and concerns

Attachments:

Attendance sheets

Photo documentation

Appendix 17: Sample Annual Environmental Monitoring Report Template

This template must be included as an appendix in the IEE that will be prepared for EACH sub- project. It can be adapted to the specific subproject as necessary.

I. Introduction

Overall project description and objectives

Description of subprojects

Environmental category of the subprojects

Details of site personnel and/or consultants responsible for environmental monitoring

Overall project and subproject progress and status

No.	Subproject Name	Status of Subproject				List of Works	Progress of Works
		Design	Preconstruction	Construction	Operational Phase		
		☐	☐	☐	☐		
		☐	☐	☐	☐		
		☐	☐	☐	☐		

Compliance status with national/state/local statutory environmental requirements

No.	Subproject Name	Statutory Environmental Requirements	Status of Compliance	Action Required

Compliance status with environmental loan covenants

No. (List Schedule and Paragraph Number of Loan Agreement)	Covenant	Status of Compliance	Action Required

II. Compliance Status with The Environmental Management and Monitoring Plan

a. Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including environmental site inspection reports.
b. There should be reporting on the following items which can be incorporated in the checklist of routine environmental site inspection reports, followed with a summary in the semi-annual report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection need to note and record the following:

What are the dust suppression techniques followed for site, and if any dust was noted to escape the site boundaries;

If muddy water was escaping site boundaries, or muddy tracks were seen on adjacent roads;

Adequacy of type of erosion and sediment control measures installed on-site, condition of erosion and sediment control measures, including if these were intact following heavy rain;

Are there designated areas for concrete works and refueling;
Are there spill kits on site, and if there are site procedure for handling emergencies;
Is there any chemical stored on site and what is the storage condition;
Are there any dewatering activities, if yes, where is the water being discharged;
How are the stockpiles being managed;
How are solid and liquid waste being handled on-site;
Review of the complaint management system; and

Checking if there are any activities being undertaken outside of working hours, and how that is being managed.

Summary Monitoring Table

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum, those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
Design Phase						
Pre-construction Phase						
Construction Phase						
Operational Phase						

Overall Compliance with EMP

No.	Subproject Name	EMP Part of Contract Documents (Y/N)	EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required

III. Approach and Methodology for Environmental Monitoring of The Project

Brief description on the approach and methodology used for environmental monitoring of each subproject.

IV. Monitoring of Environmental Impacts on Project Surroundings (Ambient Air, Water Quality, And Noise Levels)

Brief discussion on the basis for monitoring
Indicate type and location of environmental parameters to be monitored
Indicate the method of monitoring and equipment to be used
Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

As a minimum the results should be presented as per the tables below.

Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 µg/m3	SO2 µg/m3	NO2 µg/m3

Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/l	TSS mg/l	TN mg/l	TP mg/l

Noise Quality Results

Site No.	Date of Testing	Site Location	LAeq (dBA) (Government Standard)

			Day-time	Night-time

V. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

Summary of follow up time-bound actions to be taken within a set timeframe.

APPENDIXES
Photos
Summary of consultations
Copies of environmental clearances and permits
Sample of environmental site inspection report
Other

Appendix 18: Sample Environmental Site Inspection Report

Project Name

Contract Number

NAME: _____ DATE: _____

TITLE: _____ DMA: _____

LOCATION: _____ GROUP: _____

WEATHER CONDITION: _____

INITIAL SITE CONDITION: _____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory _____ Incident _____

Resolved _____ Unresolved _____

INCIDENT:

Nature of incident:_____

Intervention steps:_____

Incident issues:

Resolution

Project activity stage		
	Survey	
	Design	
	Implementation	
	Pre-commissioning	
	Guarantee period	

Inspection

Emissions	Waste minimization
Air quality	Reuse and recycling
Noise pollution	Dust and litter control
Hazardous substances	Trees and vegetation

Site restored to original condition	Yes		No	

Signature

_____

Sign off

_____ _____

Name Name

Position Position

Appendix 19: Construction Site Checklist for EMP Monitoring

Project Name: RUSDP Name of the Contractor:Yes (√) No (x)

Monitoring Details: _____

EHS supervisor appointed by contractor and available on site

- Construction site management plan (spoils, safety, material, schedule, equipment etc.,) prepared
- Traffic management plan prepared
- Dust is under control
- Excavated soil properly placed within minimum space
- Construction area is confined; no traffic/pedestrian entry observed Surplus soil/debris/waste is disposed without delay
- Construction material (sand/gravel/aggregate) brought to site as & when required only
- Tarpaulins used to cover sand & other loose material when transported by vehicles After unloading, wheels & undercarriage of vehicles cleaned prior to leaving the site
- No AC pipes disturbed/removed during excavation
- No chance finds encountered during excavation
- Work is planned in consultation with traffic police
- Work is not being conducted during heavy traffic
- Work at a stretch is completed within a day (excavation, pipe laying &backfilling)
- Pipe trenches are not kept open unduly
- Road is not completely closed; work is conducted on edge; at least one line is kept open
- Road is closed; alternative route provided & public is informed, information board provided
- Pedestrian access to houses is not blocked due to pipe laying
- Spaces left in between trenches for access
- Wooden planks/metal sheets provided across trench for pedestrian
- No public/unauthorized entry observed in work site
- Children safety measures (barricades, security) in place at work sites in residential areas
- Prior public information provided about the work, schedule and disturbances
- Caution/warning board provided on site
- Guards with red flag provided during work at busy roads
- Workers using appropriate PPE (boots, masks, gloves, helmets, ear muffs etc)
- Working conditions at SUBPROJECTS are assessed by EHS expert and ensure that there is no risk
- Workers conducting or near heavy noise work is provided with ear muffs Contractor is following standard & safe construction practices
- Deep excavation is conducted with land slip/protection measures First aid facilities are available on site and workers informed Drinking water provided at the site
- Toilet facility provided at the site
- Separate toilet facility is provided for women workers camps are maintained cleanly
- Adequate toilet & bath facilities provided
- Contractor employed local workers as far as possible Workers camp set up with the permission of PIU Adequate housing provided
- Sufficient water provided for drinking/washing/bath
- No noisy work is conducted in the nights
- Local people informed of noisy work o blasting activity conducted
- Pneumatic drills or other equipment creating vibration is not used near old/risky buildings

Appendix 20: Sample Grievance Registration Form

(To be available in Telugu and English)

The Project welcomes complaints, suggestions, queries, and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. Thank you.

Date	**Place of registration**	**Project Town** **Project:**		
Contact information/personal details				
Name		**Gender**	**Age**	
Home address				
Place				
Phone no.				
E-mail				
Complaint/suggestion/comment/question Please provide the details (who, what, where, and how) of your grievance below:				
If included as attachment/note/letter, please tick here:				
How do you want us to reach you for feedback or update on your comment/grievance?				

FOR OFFICIAL USE ONLY

Registered by: (Name of official registering grievance)
Mode of communication: Note/letter E-mail Verbal/telephonic
Reviewed by: (Names/positions of officials reviewing grievance)
Action taken:
Whether action taken disclosed: Yes No
Means of disclosure:

Appendix 21: Sample Site Specific Environmental Management Plan

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
Pre-Construction							
Necessary Statutory approvals (Environment Clearance, Consent to Establish, etc.) for environment management, building construction, water supply and fire safety, etc. Contractor Preparatory Works	Necessary planning and coordination with concerned authorities. Prior notice to and consultation with concerned authority, public to be affected so as to ensure that work does not get affected. The Contractor will complete the following activities no later than 30 days upon issuance of Notice to Proceed 1.) **Submit appointment letter and resume of the Contractor's Environmental Officer (EO) to APIIC** 2.) EO will engage PMSC-Environment Specialist and to a meeting to discuss in detail the EMP, seek clarification and recommend corresponding revisions if necessary 3.) EO will request PMSC-ES copy of monthly monitoring formats and establish deadlines for submission. 4.) EO will submit for PMSC-ES approval an	Documents like permits, licenses and its conditions	All project site	Contractor	Document Checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIICZ to inspect monthly PMSC/ PMU to inspect quarterly

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	action plan to secure all permits and approvals needed to be secured during construction stage of Phase-II development. This will include but not limited to: i) consent to establish; (ii) Agreement with TSDF for transport, storage and disposal of hazardous waste (e.g. sludge, toxic untreated wastewater) if any, iii) temporary storage location, iv) water use, v) emission and fitness compliance of all vehicles to be used for construction and transport, vi) emission compliance of DG sets to be used for construction, vii) permission for groundwater extraction from CGWB The contractor will prepare a site-specific environmental management plan considering the IEE herewith, EIA and EMP prepared for environmental clearance and conditions received therein.						
Construction Stage Site Specific Environmental Management Plan							
Exhaust emissions from vehicles, dust emissions, Fugitive	To reduce impacts from exhausts, emission control norms will be	Air quality parameters like	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
dust during material unloading, Dust suspension during site preparation, construction and trenching Emissions from DGsets	enforced/adhered. All the vehicles and construction machinery will be periodically checked to ensure compliance to the emission standards Construction equipment and transport vehicles will be periodically washed to remove accumulated dirt Providing adequately sized yard for storage of construction materials, equipment tools, earthmoving equipment, etc. Provide enclosures on all sides of construction site Movement of material will be mostly during non- peak hours. On-site vehicle speeds will be controlled to reduce excessive dust suspension in air and dispersion by traffic Water sprinkling will be carried as required, to suppress fugitive dust in the project site Environmental awareness program will be provided to the personnel involved in developmental works.	particulate matter, oxides of nitrogen, oxides of sulpher					monthly PMSC/ PMU to inspect quarterly

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	Dust generating activities to be avoided in conditions of high wind (particularly during summer season) and covers to be provided for loose construction material at construction site. Vehicle speed to be restricted to 20 Km/hr at site to minimize potential for dust generation in the surroundings. Trucks / dumpers to be covered by tarpaulin sheets during off site transportation of construction materials and spoil. Surfaced roads to be cleaned and un-surfaced roads will be stabilized to reduce offsite transport of soils and avoid dust generation.						
Noise/Vibration from following activities Vehicles transporting construction material Diesel run engines of Construction machinery	Noise levels shall be maintained below threshold levels stipulated by Central Pollution Control Board (CPCB) time to time Procurement of machinery/construction equipment in accordance with specifications conforming to source noise levels less than 75 dB (A) Well-maintained construction equipment,	Day time and night time Noise level	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	which meets the regulatory standards for source noise levels, shall be used Any equipment emitting high noise, wherever possible, shall be oriented so that the noise is directed away from sensitive receptors Noise attenuation will be practiced for noisy equipment by employing suitable techniques such as acoustic controls, insulation and vibration dampers High noise generating activities such as piling and drilling shall be scheduled in day time Personnel exposed to noise levels beyond threshold limits shall be provided with PPE.						
Impact to natural flow of runoff due to blockage and change of drainage course	Natural drain is observed as seen on the Topographical maps. Adequate storm water drainage system shall be provided. Drainage system will be provided at construction yard. Measures will be taken to prevent silting of natural drainage due to	Water logging and items which can cause flooding like boundary wall, blockage of drains	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	runoff from construction areas						
Loss of vegetation and strain on existing infrastructure.	Commencement of greenbelt development during construction phase especially in terms of nursery development and identification of indigenous species Temporary workers camp with self-sufficient infrastructure facilities.	Number of trees Water supply, power supply to labour camps.	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Traffic addition	Regularization of truck movement	Public concerns due to additional traffic movement of construction vehicles	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
Impacts due to disposal of solid waste on ground	Construction waste shall be used within project site for filling of low-lying areas. Excavated soil shall be stockpiled in a corner of the site in bunded area to avoid run off with storm water. General refuse generated on-site shall be collected in waste skips and separated from construction waste. Local authorized waste recycler shall be employed to remove general refuse from the site, separately	Solid waste generated volume of soil excavated; area of land excavated	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	from construction waste and hazardous wastes Recyclable wastes will be disposed through APPCB approved vendors Burning of refuse at construction sites shall be prohibited.						
Fire accidents due to hazardous material handling Health Issues	Adequate safety measures as per OSHA standards will be adopted Construction site will be secured by fencing with controlled/limited entry points. Hazardous materials such as lubricants, paints, compressed gases, and varnishes etc., will be stored as per the prescribed/approved safety norms. Construction site will be secured by fencing with controlled/ limited entry points Medical facilities including first aid will be made available for attending to injured workers. Handling and storage as per statutory guidelines. Positive isolation procedures will be adhered Handling and storage as	Number of accidents, Number of near miss reported	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	per MSIHC rules, MoEF guidelines with Fire protection system. Hazardous wastes, if any, shall be disposed through APPCB/CPCB approved vendors						
Impacts to the surface waterbody	Water Requirement during the construction will be met through local municipal bodies and groundwater. Care should be taken to prevent the contaminated runoff from the construction site to the nearby natural streams, if any. Optimized utilization of the water Wastewater and sewage generated shall be treated at STP or septic tank with soak pits	Physical, chemical and biological parameters	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly
R&R Loss of land	No R&R APIIC has obtained the possession of land from Relevant authorities. The phase -II land use of site is mostly barren and partly open scrub and bushes.	Encumbrance free certificate	All work site	Contractor	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect quarterly

Appendix 22: Confirmation and Acceptance of Hazardous waste by Coastal Waste Management Project (TSDF)

Coastal Waste Management Project, Unit - II
(A Division of Mumbai Waste Management Ltd.)
(A Subsidiary of Ramky Enviro Engineers Ltd.)
Govt. veterinary Polytechnic College Opposite Road,
Ravinguntapalli Village, Rapur Mandal,
SPSR Nellore Dist. - 524408, A. P., India
Phone: +91 8332042024
E: cwmptwo.nellore@ramky.com

Towards sustainable growth

REEL/CWMP-Unit II/ APIIC/ Letter1/070319

Dated: 07-03-2019

To
The Chief Engineer - South
APIIC Ltd,
Vijayawada.

Dear Sir,

Subject: Utilization of TSDF, Raviguntapalli for the Hazardous/Bio Medical/E-Waste to be generated from the proposed Industrial Park Phase-I at Srikalahasthi Node" being developed by APIIC

Ref: Your Note: Lr: CE(S)/APIIC/VCIC/North & South Node/ Consultancy Services/2018-19 Dt: 18.02.2019

This has reference to above letter regarding enquiry from your office on utilisation of *TSDF, Ravikuntapalli for the Hazardous/Bio Medical/E-Waste to be generated from the proposed Industrial Park Phase-I at Srikalahasthi Node"* being developed by APIIC.

In this regard we M/S Coastal Waste Management Unit -2 , Nellore unit (A Division of Mumbai Waste Management Limited) would like to submit that we have a Common Treatment , Storage and Disposal facility with consent and authorisation for hazardous waste from Andhra Pradesh Pollution Control Board. We also have another TSDF with name of Coastal Waste Management Unit -1 at Vishakhapatnam. Both units have sufficient capacities to cater the demands of all hazardous waste generated in the State of AP. These two facilities were developed with support of AP Government considering the growth of industries in the state of AP.

Both the facilities (Nellore and Vizag) have all the necessary statutory clearances as applicable. The permissions include

1. Environmental Clearance from Ministry of Environment and Forests Government of India setting up an Integrated Waste management Facility consisting of Secured land fill, Incinerator Facility, Waste to energy Plant, Disposal of Bio-medical waste and E-waste Recycling Unit in a Phased manner.

2. Consent For Establishment (CFE) of this facility at Nellore for establishing an Integrated Common Hazardous Waste Treatment, Storage and Disposal and Recycling facility with Secured Landfill, Recycling of Spent Solvents, E Waste, Used Oil, Used Lead Batteries, Alternative Fuel and Raw Material, Bio Medical Waste in Phase-I, Waste Plastic Recycling, Waste Plastic Recycling, Incineration in Phase-II, Renewable Energy, Waste to Energy in Phase-III.

3. No objection Certificate (NOC) for this project from Panchayat Secretary, Bojjanpalli Village, Rapur (M), SPSR Nellore District

4. Factory License from the Office of Inspector of Factories, Nellore – Circle, S.P.S.R Nellore.

5. Approval of landfill Design from the Department of Civil Engineering, Indian Institute of Technology, Madras and from Department Civil Engineering, Sri Venkateswara University, Tirupati had inspected each layout of the Hazardous Waste Landfill.

6. Consent to Operate (CTO) was issued to M/s Coastal Waste Management Project (Unit-vide Consent no: APPCB/UH:IV/HWM/CFO/CWMP-NLR/2018 dated 10.10.2018. We have the below mentioned capacities authorised by APPCB (For further details, our CFO attached).

S No	Type of Waste	Units	Capacity Authorized per Day
1	Hazardous Waste	Secured Landfill	548 MT
2	Hazardous Waste	Stabilization	383 MT
3	Hazardous Waste	Alternate fuel and Raw Material	55 MT
4	Recyclable Waste	E Waste	82 MT

We are operational from January 2019, and the waste quantities being received currently are negligible. We confirm that we have sufficient capacities to accommodate all hazardous waste not only limited to the proposal of 50-75 MT /day of estimated waste generation from the proposed Industrial Park at Srikalahasti Node at Routhusurmala but also of all the other industrial estates coming up in the state of AP in future .

We hereby confirm our acceptance to accommodate the hazardous wastes from various industrial units of all sectors as mentioned in the IP . Any further documents required may kindly be sought for

Thanking you.

Yours faithfully,

For Coastal Waste Management Project Unit-2 (A Div. of MWML)

Authorised Signatory
(Madhu Babu V B)

Appendix 23: Health and Safety Plan VCICDP Project 2

SOP-Health and Safety Plan for COVID19 Pandemic

Document Stage: Final

June 2020

Loan 3430-IND and Grant 0495: Visakhapatnam-Chennai Industrial Corridor Development Program, Project 1

Visakhapatnam-Chennai Industrial Corridor Development Program, Tranche 2

Prepared by Government of Andhra Pradesh for the Asian Development Bank.

CONTENTS

1 INTRODUCTION

- This document is intended to supplement formal H&S policies, procedures and plans that the contractor has in place for its employees and staff working on VCICDP projects under loan 3430-IND and Grant 0495 and Visakhapatnam-Chennai Industrial Corridor Development Program Tranche 2. Hence, this document is not intended to replace any formalized procedures currently in place for the Contractor. Where this guideline does not meet or exceed the standards put forth by the Contractor, the Contractor shall abide by the most stringent procedure available.

- This approved project specific Health and Safety Plan (H&SP) shall be modified to require that the COVID-19 Officer (supervised by the contractor's environmental and health and safety officer) at the Contractor's worksite (appointed by Contractor and agreed by PIU) submit a written daily report to the Client's Representative (PIU Head). The COVID-19 Officer shall certify that the Contractor and all subcontractors are in full compliance with these guidelines.

- The COVID-19 officer should be present on site at all times.

- Any issue of non-compliance with these guidelines shall be a basis for the suspension of work. The Contractor will be required to submit a corrective action plan (on the next day or immediately as per the nature of issue) detailing each issue of non-conformance and a plan to rectify the issue(s). The Contractor will not be allowed to resume work until the plan is approved by the Client (PIU). Any additional issues of non-conformance may be subject to action against the Contractor's as health & safety/safeguard clauses of the contract.

- Construction sites operating during the Covid-19 pandemic need to ensure they are protecting their WORKFORCE and minimising the risk of spread of infection.

- This guidance is intended to introduce consistent measures on sites of all sizes in line with the Government's recommendations on social distancing.

- These are exceptional circumstances and the industry must remain abreast of and comply with the latest Government advice on COVID-19at all times.

- The health and safety requirements of any construction activity must also not be compromised at this time. If an activity cannot be undertaken safely due to a lack of suitably qualified personnel being available or social distancing being implemented, it should not take place.

- It is to be noted that emergency services are also under great pressure and may not be in a position to respond as quickly as usual.

- Sites should remind the workforce at every opportunity of the Worksite Procedures which are aimed at protecting them, their colleagues, their families and the Andhra Pradesh population.

If a worksite is not consistently implementing the measures in this document, it may be required to shut down.

2 PRINCIPLES OF WORKER PROTECTION

- Consistently practice social distancing
- Cover coughs and sneezes
- Maintain hand hygiene
- Clean surfaces frequently

3 MAXIMUM PRECAUTION FOR PERSONS/LABOURERS REPORTING TO WORK

- IF SICK, STAY HOME!
- IF SICK, GO HOME!
- IF SOMEONE SICK, SEND THEM HOME!

Contractor to provide face masks (of the type approved by Government for use to protect persons from COVID-19) to all persons working in or visiting the worksite. This along with procedures set out in this document is for maximum precaution to protect all persons/labourers at all times.

4 COVID-19 TYPICAL SYMPTOMS

- Fever
- Cough
- Shortness of Breath
- Sore Throat

All persons at the worksite should have their temperature screened by COVID-19 officer with Infrared Thermometer (handheld non-contact).

5 SELF-ATTESTATION BY PERSONS/LABOUR PRIOR TO WORK

Prior to starting a work (on daily basis), each labour /worker will self-attest to the supervisor:

- no signs of COVID-19 symptoms within the past 24 hours.
- No contact with an individual diagnosed with COVID-19. (contact means living with a positive person, being within 6 ft of positive person OR sharing things of positive person)
- Not undergone quarantine or isolation (in case of any labourer /worker who has been quarantined or isolated previously, the engagement shall be only after obtaining the requisite clearance)

The engagement of workers falling in the high-risk category such as workers over the age of 55 years, with underlying medical conditions or health issues, etc. should be done only after obtaining the requisite clearance from trained and registered medical practitioners.

The self-attestation would be verified in collaboration with trained and registered medical practitioners deployed at site through discussions with laborers /workers and/or preliminary checks such as temperature checks, etc. prior to their engagement at site.

In addition, the Contractor shall mandatorily follow all medical test requirements for the workers prior to their engagement and/or mobilization at site as per the guidelines issued by the Central and State government agencies and WHO from time to time.

Persons/Labourers showing COVID-19 symptoms or not providing self-attestation shall be directed to leave the work site and report to the fever clinic/quarantine centre immediately. Labour not to return to the work site until cleared by fever clinic/quarantine centre.

6 GENERAL DIRECTION

- No handshake, Only Namaste
- Non-essential physical work that requires close contact between workers should not be carried out
- Work requiring physical contact should not be carried out
- Plan all other work to minimise contact between workers
- Wash hands often (every 1-2 hrs or frequently as possible) with soap for at least 20 seconds
- Use hand sanitizer
- No person should enter the work site other than the authorized persons mentioned by supervisor during start of work
- All must implement social distancing by maintaining a minimum distance of 6-feet from others at all times to eliminate the potential of cross contamination.
- Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing i.e., 6 ft from others.
- Conduct all meetings via conference calls, if possible. Do not convene meetings of more than 10 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion
- All individual work group meetings/ talks should follow social distancing
- At each job briefing/toolbox talk, employees are asked if they are experiencing any symptoms, and are sent home if they are
- Each worksite should have laminated COVID-19 safety guidelines and handwashing instructions

- All restroom/toilet facilities should be cleaned (min twice a day), and handwashing facility must be provided with soap, hand sanitizer and paper towels

- All surfaces should be regularly cleaned, including mobiles, tabletops /surfaces, door handles, laptops, records, etc.

- All common areas and meeting areas are to be regularly cleaned (min twice a day) and disinfected at least twice a day

- All persons to maintain their own water bottle and should not be shared.

- To avoid external contamination, it is recommended everyone bring food from home

- Please maintain Social Distancing separation during breaks and lunch.

- Cover coughing or sneezing with a tissue, then throw the tissue in the trash and wash hands, if no tissue is available then cough /sneeze into your upper sleeves or elbow. Do not cough or sneeze into your hands.

- Clean your hands after coughing or sneezing thoroughly by using soap and water (minimum for 20 seconds). If soap and water are not available, please use a hand sanitizer. The Contractor shall ensure adequate quantities of sanitizer and soap are made available at all locations including site offices, meeting rooms, corridors, washrooms /toilets, etc. as appropriate.

- Avoid touching eyes, nose, and mouth with your hands

- To avoid sharing germs, please clean up after Yourself. DO NOT make others responsible for moving, unpacking and packing up your personal belongings

- If you or a family member is feeling ill, stay home!

- Work schedules are adjusted to provide time for proper cleaning and disinfecting as required.

7 WORK-SITE PREVENTION PRACTICES

- At the start of each shift, confirm with all employees that they are healthy and inform all workers of reusable and disposable PPE.

- Outside person(s) should be strictly prohibited at worksite

- All construction workers will be required to wear cut-resistant gloves or the equivalent.

- Use of eye protection (reusable safety goggles/face shields) is recommended. The supply of eye protection equipment to the workers is considered as a standard part of PPE during construction works.

- In work conditions where required social distancing is impossible to achieve, such employees shall be supplied with standard face mask, gloves, and eye protection.

- All employees shall drive to work site as per the prevailing guidelines of the Government in a single occupant vehicle. Staff shall not ride together in the same vehicle

- When entering a machine or vehicle which you are not sure you were the last person to enter, make sure that you wipe down the interior and door handles with disinfectant (with 1% sodium hypochlorite solution daily) prior to entry. Adequate quantity of the disinfectant shall be provided by the Contractor at all such site-specific locations.

- Workers should maintain separation of 6’ from each other.

- Multi person activities will be limited where feasible (two persons lifting activities)

- Gathering places on the site such as sheds and/or break areas will be eliminated, and instead small break areas will be used with seating limited to ensure social distancing.

- Contact the cleaning person of the worksite and ensure proper COVID-19 sanitation processes. Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning. The Contractor shall make available adequate supply of PPE and chemicals while the threat of COVID-19 continues.

- Clean all high contact surfaces a minimum of twice a day in order to minimize the spread of germs in areas that people touch frequently. This includes but is not limited to desks, laptops and vehicles

- All employees to maintaining good health by getting adequate sleep; eating a balanced, healthy diet, avoid alcohol; and consume plenty of fluids.

- Continuation of works in construction project with workers available on site and no workers to be brought in from outside

- The site offices shall have adequate ventilation. The air conditioning or ventilation systems installed at the site offices would have high-efficiency air filters to reduce the risk of infection. The frequency of air changes may be increased for areas where close personal proximity cannot be fully prevented such as control rooms, elevators, waiting rooms, etc.

- The Contractor shall carry out contactless temperature checks for the workers prior to site entrance, during working hours and after site works to identify persons showing signs of being unwell with the COVID-19 symptoms

8 WASHING FACILITY

- All worksites should have access to toilet and hand washing facility.
- Providing hand cleaning facilities at entrances and exits. This should be soap and water wherever possible or hand sanitiser if water is not available
- Washing facility with hot water, and soap at fire hydrants or other water sources to be used for frequent handwashing for all onsite employees
- All onsite workers must help to maintain and keep stations clean
- If a worker notices soap or towels are running low or out, immediately notify supervisors. Proactively supervisor should make sure shortage situation never occurs.
- Garbage bins will be placed next to the hand wash facility for discarding of used tissues/towels with regular removal and disposal facility (end of each day)

9 CLEANING PROCEDURES

Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning.

Each worksite should have enhanced cleaning and disinfection procedures that are posted and shared including sheds, gates, equipment, vehicles, etc. and shall be posted at all entry points to the sites, and throughout the project site. These include common areas and high touch points like

- Taps and washing facilities
- Toilet flush and seats
- Door handles and push plates
- Handrails on staircases and corridors
- Lift and hoist controls
- Machinery and equipment controls
- Food preparation and eating surfaces
- Telephone equipment / mobiles
- Keyboards, photocopiers and other office equipment

Re-usable PPE should be thoroughly cleaned after use and not shared between workers

10 LABOUR CAMP

Contractor shall follow a zero-tolerance policy on wearing of masks.

Masks (homemade can be thought of) to be provided to all the persons/labourers for use at the camp site as well as at the worksite. Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with disposable gloves, gown and face mask for each cycle of cleaning.

10.1 Toilet Facility

- Restrict the number of people using toilet facility at any one time e.g. appoint one welfare attendant among the labours.
- Wash hands before and after using the facilities
- Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush
- Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently
- Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal.

10.2 Eating/snacks Arrangements

- With eateries having been closed (restricted) across Andhra Pradesh, providing permanent (till society is safe from COVID-19) on-camp/off-camp cook/helpers can be implemented. Make sure that the “Guidelines for food handling, preparation and distribution during COVID-19” and it regular updates are being followed.
- Whilst there is a requirement for construction camps to provide a means of heating food and making hot water, these are exceptional circumstances and where it is not possible to introduce a means of keeping equipment clean between use, etc. must be removed from use.
- Contractor to arrange all daily need items and grocery at site itself and no worker is allowed to go to shops for daily need items.
- Dedicated eating areas should be identified on camp to reduce food waste and contamination
- Break times should be staggered to reduce congestion and contact at all times
- Hand cleaning facilities or hand sanitiser should be available at the entrance of any room where people eat and should be used by workers when entering and leaving the area
- Workers should sit 2 metres “6 feet” apart from each other whilst eating and avoid all contact
- Where catering is provided on camp, it should provide pre-prepared and wrapped food only

- Payments should be taken by contactless options wherever possible
- Crockery, eating utensils, cups etc. should be avoided wherever possible

- Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced
- Tables should be cleaned between each use
- All rubbish should be put straight in the bin and not left for someone else to clear up; only covered pedal operated bins should be used and the bins should be cleared and cleaned regularly, with strict adherence to safety protocols for disposal and hygiene maintenance (including proper PPE's such as gloves, mask and apron worn by the waste handler/cleaner and disposal at a designated place);
- All areas used for eating must be thoroughly cleaned at the end of each break and shift, including chairs, door handles, etc.

10.3 Changing Facilities, Showers and Drying Areas

- Introduce staggered start and finish times to reduce congestion and contact at all times
- Introduce enhanced cleaning of all facilities throughout the day and at the end of each day
- Consider increasing the number or size of facilities available on camp if possible
- Based on the size of each facility, determine how many people can use it at any one time to maintain a distance of two metres
- Provide suitable and sufficient garbage bins in these areas with regular removal and disposal.
- Visitor log should be strictly maintained that the labour camp.

COVID-19 officer will ensure compliance with prevention issues at the labour camp(s).

11 UPDATES ON COVID-19

The Contractor shall be in touch with the Department of Health & Family Welfare and Labour Department to identify any potential worksite exposures relating to COVID-19, including:

- Strictly follow the guidelines issues by Ministry of health and OSHA
- Other workers, vendors, inspectors, or visitors to the worksite with close contact to the individual
- Labour Camps / Work areas such as designated workstations or rooms/sheds

- Work tools and equipment
- Common areas such as break rooms, tables and sanitary facilities

Also refer the following websites from time to time for regular updates.

https://www.mohfw.gov.in/

http://hmfw.ap.gov.in/

This document can be updated from time to time based on the advisories or directions of the Government.

12 TRAINING

- RPMU/PIU to ensure all workers get training on above requirements before start of any construction activity
- During construction period frequent visual and verbal reminders to workers can improve compliance with hand hygiene practices and thus reduce rates of infection. Handwashing posters should also be displayed at work site and labour camps

13 EMERGENCY CONTACT

- Provide emergency contact number(s) at work site and labour camp for reporting COVID-19 symptoms

Ensure all staff and personal use the AarogyaSetu App, recommended by GOI for tracking COVID-19 patients.

Appendix 24: Proposed Project Zoning

1.Planning Concept/Design Basis

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.

Sustainable Development: In the project site there are many constraints are noticed such as Irrigation canal, HT corridors and natural streams. Considering, all the constrains straight roads and maximum square plots are planned. Residential land use with green buffer is proposed near to existing settlements adjacent to project boundary. Multiple open spaces are provided to serve as lung space in the cluster. The planning of industrial clusters 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.

Synergy with land use: In order to reduce the impact on the surrounding settlements, compatible activities are proposed around it. On the southern boundary of the project site stream is passing, based on the guidelines no activities are proposed in the vicinity of the streams and also adequate buffers are left for the existing streams, irrigation canals & HT line passing through the site. The site has undulating terrain sloping towards the south. These topographical aspects were considered for water, wastewater and storm water management. The integrated master plan is prepared by considering all the constrains noticed inside the project site.

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 GoAP, G.O.Ms.No.67, 168, 275. Green buffer are left along the project boundary and also in between different activities such as canal, stream water body and also constrains noticed within the cluster. The necessary buffer is provided by considering all stringent provisions of above G.O.

Traffic Management: The already existing roads were taken into consideration while planning and proposing the internal road network. Alternate entry/ exit are provided for emergency evacuation. As well as some portion of existing roads is integrated and existing ingress & outgress from this project is also well connected to the proposed road network.

Wind Direction: The predominant wind direction is Southwest/South, which was taken into consideration during the zoning of industries.

The Planning parameters are shown in Figure below.

Figure 28: Planning Parameters

Based on the zoning concept, a land use plan is prepared incorporating the current plot divisions and possible future sub-divisions. The industrial plots, common utilities,

infrastructure services are conveniently located based on the site boundary, contour and other factors. In the land designated for industrial activities, industrial clusters are preferred to individual industries which results in synergy and co-existence and optimal sharing of industry related facilities.

2. Industrial Zoning

As suggested by MoEF&CC, no red category industry will be established within 300 m of settlement inside and outside the project boundary and zoning plan of proposed industries is given in Error! Reference source not found.. Arrangement of Green buffer and no pollution industry around the settlements representation was given in Figure below.

Figure 29: Zoning Plan of Proposed Industries

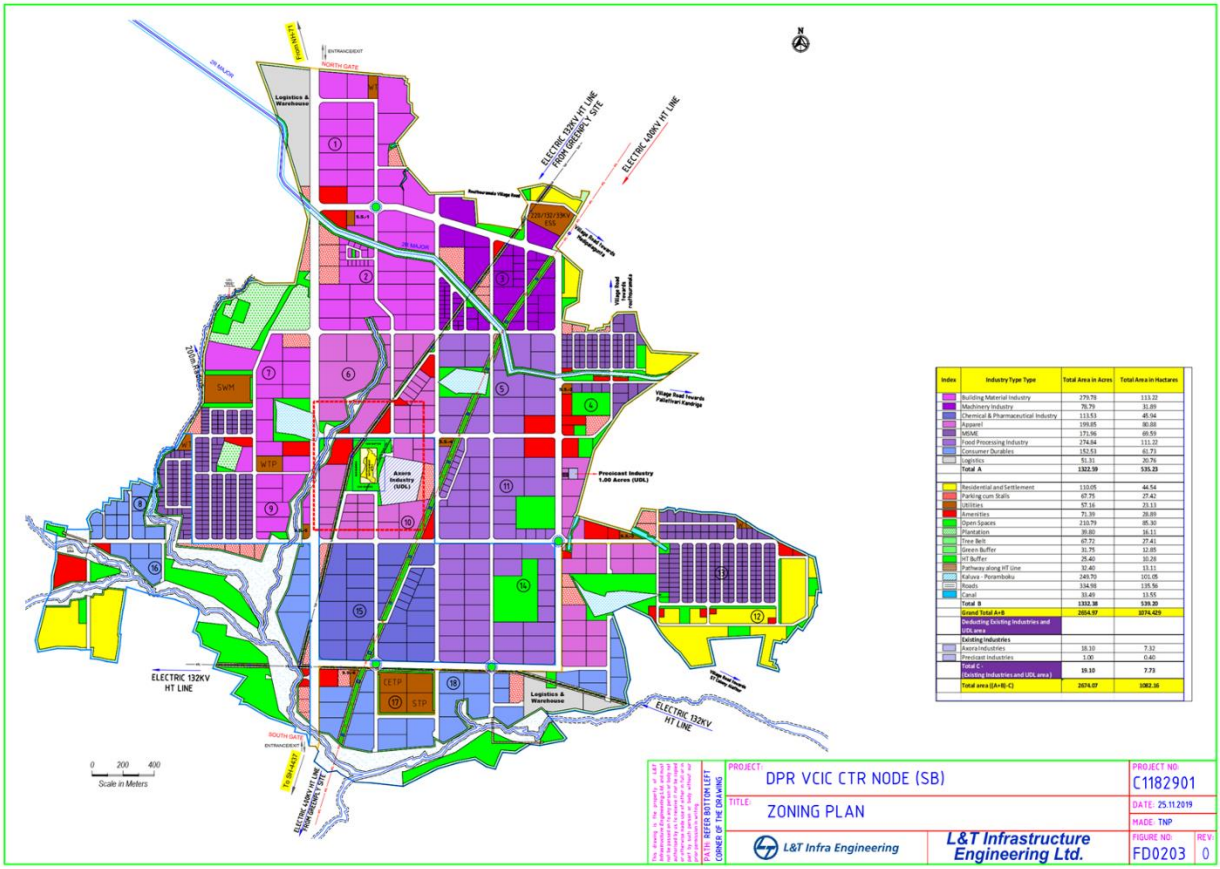
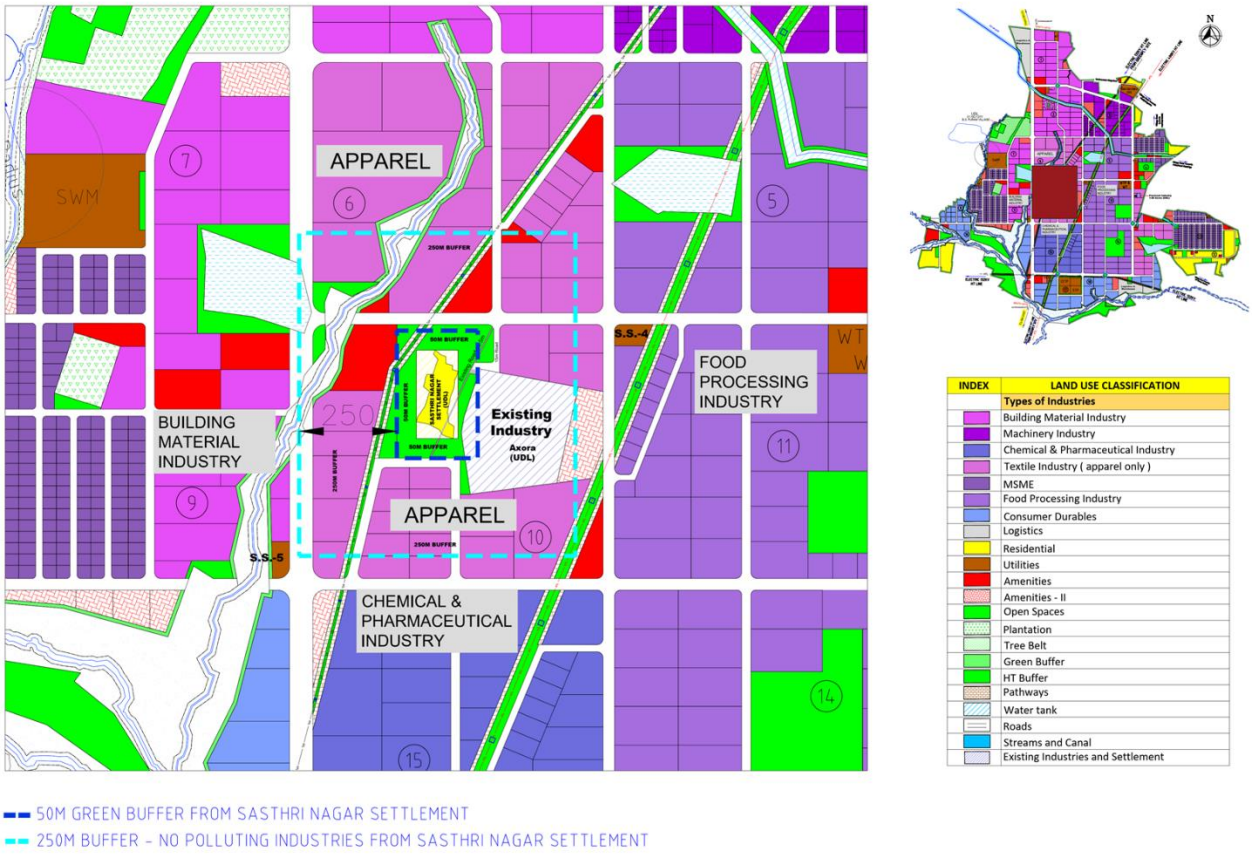


Figure 30: Zoning Plan with buffer around the Settlements and No Polluting Industry around the settlements



Appendix 25: EC Specific Conditions and Compliance

Environmental Clearance from MoEF&CC for Development of Industrial Park (Phase-I) at Srikalahasthi Node situated in villages Routhusurumala, Gowdamala, Kothatpalem, Alathuru and B.S. Puram, Mandals Thottambedu and B.N. Kandriga, District Chittoor, Andhra Pradesh by M/s Andhra Pradesh Industrial Infrastructure Corporation Ltd., Routhusurumala, Gowdamala, Kothapalem, Alathuru and B.S.Puram revenue villages in Thottambedu and B. N. Kandriga Mandals of Chittoor District, Andhra Pradesh were obtained through vide letter no. File No.: 21-76/2018-IA.III [Proposal No. IA/AP/NCP/80694/2018] dated November 11, 2020 (EC letter were provided as **Appendix 2**)

The following are the specific conditions and compliances

S. No.	A. SPECIFIC CONDITIONS	Compliance
(i)	To achieve the Zero Liquid Discharge, wastewater generated from different industrial operations shall be properly collected, treated to the prescribed standards and then recycled or reused for the identified uses.	Zero Liquid Discharge (ZLD) wastewater treatment plant is planned for treatment of wastewater. The wastewater generated at Industrial Park will be collected and treated in Common Effluent Treatment Plant (CETP) whereas sewage generated from residential areas will be treated in STP. It is proposed to develop a CETP of ultimate capacity of 5.11 MLD on a Modular basis (1.2 MLD initially) and STP of 1.2 MLD under wastewater treatment system considering inflows from different industrial clusters in the park. CETP development was proposed under the subproject and IEE for CETP was prepared and included as a separate contract package under VCICDP.
(ii)	The quantity of freshwater usage, water recycling and rainwater harvesting shall be measured/recorded to ensure the water balance as projected by the project proponent. The record shall be submitted to the Regional Office, MoEF&CC along with six Monthly Monitoring reports.	Shall be complied and adhered during the implementation stage
(iii)	All the recommendation of the EMP shall be complied with in letter and spirit.	Shall be complied and adhered during the implementation stage
(iv)	The member units shall provide storage tanks for storage of effluent for monitoring the characteristics of effluent before taking into the CETP for further treatment.	Shall be complied and adhered during the implementation stage and specific guidelines shall be developed for compiling the same
(v)	Proper meters with recording facilities shall be provided to monitor the effluent quality and quantity sent from member industries to CETP and from CETP to the final disposal/re-use on a continuous basis.	
(vi)	Ambient noise levels shall conform to the prescribed standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during development/ construction phase. Adequate measures shall be made to	

S. No.	A. SPECIFIC CONDITIONS	Compliance
	reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/SPCB.	
(vii)	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on 27th August 2003 and 25th January, 2016.	
(viii)	Rainwater harvesting for roof run-off and surface run- off, as plan submitted shall be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The bore well for rainwater recharging shall be kept at least 4 m above the highest ground water table.	Shall be complied and adhered during the implementation stage
(ix)	As per the Ministry's Office Memorandum F. No. 22-65/2017-IA.III dated 30th September, 2020, the project proponent shall abide by all the commitments made by them to address the concerns raised during the public consultation. The project proponent shall initiate the activities proposed by them, based on the commitment made in the public hearing, and incorporate in the Environmental Management Plan and submit to the Ministry. All other activities including pollution control, environmental protection and conservation, R&R, wildlife and forest conservation/protection measures including the NPV, Compensatory Afforestation etc., either proposed by the project proponent based on the social impact assessment and R&R action plan carried out during the preparation of EIA report or prescribed by EAC, shall also be implemented and become part of EMP.	Shall be complied and adhered during the implementation stage

Appendix 26: APIIC Note on CETP for Tranche-2

APIIC
The Future is Here

Andhra Pradesh
Industrial Infrastructure Corporation Ltd.,
(Govt. of Andhra Pradesh Undertaking)

Note on CETP under Tranche -II

Under the "National Industrial Corridor Development Programme" Government of Andhra Pradesh has taken up the Visakhapatnam-Chennai Industrial Corridor Development Program (VCIC-DP), with financial assistance from Asian Development bank (ADB) to develop State of the Art Infrastructure in three Industrial Clusters i.e. Nakkapalli and Rambilli in Visakhapatnam and Srikalahasthi – Yerpedu in Chittoor Node.

The Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC) is one of the Project Implementing Units. Under Tranche-II APIIC is implementing the projects including Infrastructure development sub projects (i.e. APIIC 06A, 08A, 09A and AMTZ-I) and 4 CETP sub-projects (i.e. APIIC 06B, 08B, 09B, 10).

The internal Infrastructure development sub-projects, i.e., APIIC/06A, APIIC/08A and APIIC/09A are undergoing tendering process in consultation with ADB and are essential for development of industrial clusters which can be monetized immediately. Further, the CETPs shall be required during the occupancy phase of these industrial clusters.

In light of above, it is proposed that, the CETPs will be taken up in Design Built Operate Finance and Transfer mode (DBFOT) post completion of the internal industrial infrastructure. It will be ensured that these CETP will be kept ready before the Industrial unit's starts their operations. Otherwise, Individual industries are advised to set up their own arrangements as per PCB Norms till CETP gets operated. Further, it is ensured that CETP's design will be in line with statutory approvals from MoEF & CC, Pollution Control Board, and other regulatory authorities.

Regarding maintenance of Green belt initially it will be maintained by raw water. Once CETP is commissioned, the recycle water is shall be used within the industrial park.

Engineer-In-Chief
APIIC Ltd, Mangalagiri.

Regd. Office :
PARISRAMA BHAVAN,6th floor,
5-9-58/B, Fateh Maidan Road,
Basheerbagh, Hyderabad-500 004.

Corporate Office :
APIIC TOWERS, IT Park,
Mangalagiri, Guntur Dist.,
Andhra Pradesh-522503.

0863-2381850
www.apiic.in
CIN No. U99999TG1973SGC0016