Initial Environmental Examination

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

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

Package No: VCICDP/APIIC/09A

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

CURRENCY EQUIVALENTS

(As of 17 November 2022)

Currency unit - Indian rupee (₹)

₹ 1.00 = $ 0.012

$1.00 = ₹81.54

ADB	-	Asian Development Bank
AP	-	Andhra Pradesh
APIIC	-	Andhra Pradesh Industrial and Infrastructure Corporation Limited
ATMs	-	Automated Teller Machines
AMSL	-	Above Mean Sea Level
BIS	-	Bureau of Indian Standards
MBGL	-	Meters Below Ground Level
CPCB	-	Central Pollution Control Board
CSA	-	Core Study Area
CRZ	-	Costal Regulatory Zone
CETP	-	Common Effluent Treatment Plant
COVID19	-	Corona Virus Infectious disease of 2019
DG	-	Diesel generator
EC	-	Environment Clearance
EAC	-	Expert Appraisal Committee
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
EMoP	-	Environmental Monitoring Plan
GoAP	-	Government of Andhra Pradesh
GRM	-	Grievance Redress Mechanism
GoI	-	Government of India
HTL	-	High Tide Line
IEE	-	Initial Environmental Examination
MoEF&CC	-	Ministry of Environment, Forests and Climate Change
MoU	-	Memorandum of Understanding
MLD	-	Million litres Per Day
NH	-	National Highway
NGO	-	Non - Government Organization
NOx	-	Oxides of Nitrogen
NAAQS	-	National Ambient Air Quality Standards
PIA	-	Project Influenced Area
PUC	-	Pollution Under Control
RF	-	Reserve Forest
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
UTPCC	-	Union territory Pollution Control Committee
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
YLMC	-	Yeleru Left Main Canal

NOTE

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

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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. 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, and (iv) improve awareness and knowledge among the community members including women in Chittoor–South industrial cluster. 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/09A pertains to the output 1 for the Visakhapatnam node for Development of Start-up Area of Nakkapalli 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 Nakappalli Industrial Cluster in Visakhapatnam node.

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 IEE report.

This IEE[2] has been prepared for Package No. APIIC/09 A 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 (MoEF&CC) 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 an industrial cluster in 1774.98 ha of land in Nakappalli. Most of the required land has been acquired. A phased development approach

[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 is mainly focused on activities related with the infrastructure development in the start-up area that are supported by the ADB loan under the VCICDP. CETP shall be constructed by APIIC from GoAP funds following the Design Build Operate Fund and Transfer mode after the construction of internal infrastructure (Refer Appendix 17)

in line with the already prepared master plan shall be adopted. The first phase shall include a start-up area of 441 ha of which 231 ha shall be industrial plots and 12.5 ha shall be residential and commercial plots. The industrial park shall be connected to NH16 through a new road proposed to be constructed under VCICDP Project 2. This subproject under Project 2 of VCICDP is to provide bulk water supply and internal infrastructure to the start-up area. The sub project shall construct internal roads, drains, bulk water supply facilities, summer storage tank, water treatment plant and internal water supply, and internal power distribution lines. Water shall be sourced from the Yeluru Left Main Canal and power from the Chandanada substation. CETP shall be constructed by APIIC after all infrastructural works are completed using GoAP funding. APIIC shall be the implementing agency.

This subproject shall have the following components: (a) 21.93 km roads with 67 culverts, 2 minor bridges and a major bridge; (b) 43.80 km storm water drain; (c) Offtake work at Yeluru Left Main Canal; (d) Raw water transmission lines of 450 mm diameter DI K7 pipe 38.3 Km, 350 mm diameter DI K9 pipe 220 m, and 200 mm diameter DI K9 pipe 200m; (e) Summer storage tank of 546 ML capacity to cater for 60 days of initial stage demand; (f) 300 KL raw water sump at WTP; (g) Two pumps (1 working and 1 standby) of 20 KW and 300 mm DI K9 pipe of 550 m length to pump water from SST to WTP; (h)6.5 MLD water treatment plant; (i) 600 KL sump, 2 (1working and 1 standby) 70 KW pump and 300 mm DI K9 pipes to pump water over a length of 1500 m to the Ground Level Service Reservoir; (j) Ground Level Service Reservoir of 2200 KL capacity at hillock; (k) 24.36 km water distribution pipelines of DI K7 pipe of 100 mm to 400 mm diameter; (l) 2 Nos 33 KV Electrical substation, 12.19 km 33KV UG cable, 91.39 km, 11 KV UG cables, internal power units and 7 high masts and 692 street lights; (m) and Landscape and plantation works in green and green areas, environmental Monitoring, O&M of WTP.

Future Development: The ADB financial support will be confined to the components mentioned above, however, APIIC will be developing other infrastructure within the Nakapalli industrial cluster using GOAP funds that will form a part of the future facilities for this industrial area. This will include additional requirements for the industrial area such as additional networks for roads, sewerage, electrical and water supply distribution, CETP, etc. Comprehensive Environmental Impact Assessment (EIA)[3] for the total area has been conducted by APIIC as a part of its Environment Clearance process, however, associated impacts have been considered in the IEE from ADB supported components and future planned developments. The Environmental Clearance is expected to be secured by March 2023 . 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[4]), the Coastal Waste Management Project, located at Parawada.

[3] EIA study conducted for obtaining Environmental Clearance and CFE for Nakapalli Industrial Park. TOR issued by MOEFCC is attached as Appendix 21.

[4] Nearby TSDF disposal site is M/s. Coastal Waste Management Project, at Sy. No. 183, 53/P, JN Pharma city, Road No.13, Parawada Mandal, Visakhapatnam, Andhra Pradesh 531019. Latitude and longitude 17°38'44.38"N&83° 4'56.91"E. Facility is in operation. Incineration System with Capacity: 5.5 Mkcals/hour

Description of the Environment. The subproject site is mostly comprised of Agriculture plantation and cropland, scrub land rural built-up area. 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 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; (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[5] / 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.

Capable to handle Bulk solids, Tarry wastes, Semisolids, Heat recovery system and energetic liquid collecting from various industries. Consent Order was obtained in 25.02.2017 and valid till date.

[5] 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, APIIC EMC shall ensure that the environmentalimpacts from the industries during the operational phase are adequately managed and in compliance with the GOI / GoAP requirements.

There will be no dependence on Ground water or other surface water sources during the operation of Nakapalli start up area. Though the proposed development will not draw Ground water during its operation stage and the study region is falling under mostly Safe to Semi critical category, rainwater harvesting system to be implemented by individual industries shall be encouraged. The domestic / industrial wastewater generated by the industries shall be treated through their own ETP / STP units and managed as per APPCB norms till the CETP operations at the industrial park are commenced. 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.

The due diligence performed by the project team was not restricted due to the COVID19 pandemic. Most of the assessment study was conducted prior to onset of COVID19 restrictions. Necessary precautions in terms of masks, social distancing and other COVID19 protocols were followed while conducting the subsequent stakeholder assessments, 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. Appropriate measures for avoiding / mitigating any impacts on biodiversity and ensuring adequate health and safety of workers for any pandemic such as COVID-19 are included in the environmental management plan.

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.

Indicative EMP Cost: Based on the mitigation measures and monitoring program as specified in the EMP of this IEE, the indicative budget[6] for environmental monitoring cost during construction is **₹1,56,00,000.** 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

[6]EMP Implementation Cost Table 67.

GRM implementation). The costs to implement additional 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.

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 which is expected by March 2023 . 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 sub-plans 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. INTRODUCTION

A. Background

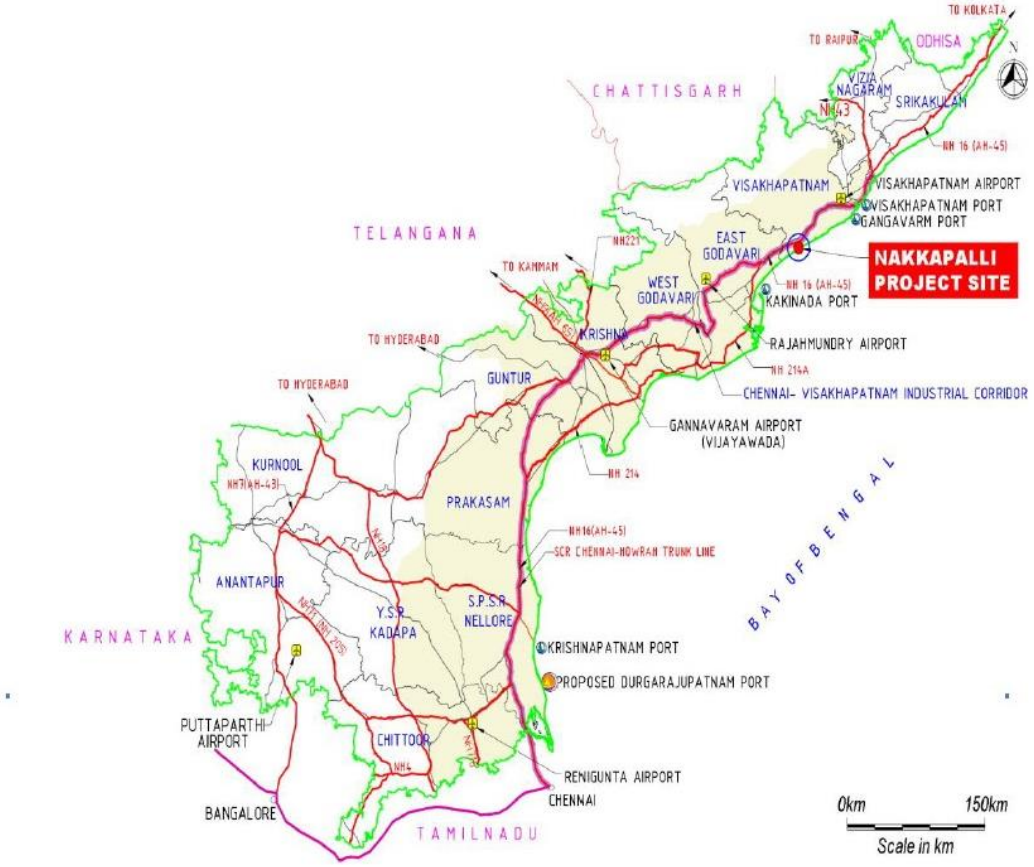
1. Government of Andhra Pradesh (GoAP) has proposed to develop Vizag – Chennai Industrial Corridor (VCIC) with the financial assistance of Asian Development Bank (ADB). VCIC is a key segment of the East Coast Economic Corridor and also India's first coastal economic corridor. VCIC is aimed at fulfilling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

2. Visakhapatnam, one of the key districts coming within the immediate influence of VCIC has all the potential to become an industrial hub. Government of Andhra Pradesh (GoAP) has embarked on major initiative of positioning Visakhapatnam District as the central hub for various sunrise sectors in an endeavor to attract investments from National and International Players across the globe.

3. The district is known as the central hub for industry and education in the state of Andhra Pradesh. Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC), a wholly owned subsidiary of Government of Andhra Pradesh (GoAP) proposed to promote the industrialization at Nakkapalli Mandal. In this regard, APIIC identified around 452.96 Ha (1120acres) as a start-up area lands at Nakkapalli Mandal within the district for the purpose of industrialization.

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

Figure 1: Location of project within VCIC



5. As per the existing industrial scenario, proposed VCIC envisaged developments and investor interests expressed through MoUs in Visakhapatnam, the following are key industrial sectors that emerge as top contributors in Visakhapatnam.

(i) Chemicals and Petrochemicals
(ii) Pharmaceuticals
(iii) Food Processing
(iv) Textile and Apparel
(v) Metallurgical Industries
(vi) Electronics
(vii) Aerospace & Defence

6. The above sectors were further evaluated and APIIC proposes to focus the following sectors for investment at Nakkapalli industrial area:

(i) Pharmaceuticals
(ii) Aerospace and defense
(iii) General purpose machinery
(iv) Casting and forging
(v) Special purpose machinery

B. Purpose/Objective of IEE

7. 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

8. 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.

9. The IEE report covers the general environmental profile of the study area and includes an overview of the potential environmental impacts and their magnitude on physical, ecological, economic, and social and cultural resources within the project's influence area during design, construction, and operation stages. An EMP was prepared that contains mitigation measures for significant environmental impacts during implementation of the project, environmental monitoring program, and the responsible entities for mitigation and monitoring. IEE has four basic objectives; (i) identify the environmental issues that should be taken into account due to project interventions (ii) determine the magnitude of potential environmental concerns and to ensure that environmental considerations are given adequate weight at planning/design stage (iii) identify need for further environmental studies or Environmental Impact Assessment (EIA) and, (iv) suggest enhancement measures, if any.

C. Extent of the IEE study

10. 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 analyzed 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

11. 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) Interviews on a sample basis with stakeholders and representatives of the local community
    (vi) Assessment of Potential Impacts
    (vii) Preparation of the Environment Management Plan

1. Primary Data Collection

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

2. Secondary Data Collection

13. 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

14. 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.

4. Other Tools

15. 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.

Information	Sources
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
River geo-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

5. Assessment of Potential Impacts

16. 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.

6. Preparation of the Environment Management Plan

17. 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

18. 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.

19. 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.

20. 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.

21. **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 land owners and the extent of land being acquired as a percentage total land holding.

F. Structure of the Report

22. 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 the 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

23. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB 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.

24. **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.

25. 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.

26. **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.

27. **Public Disclosure:** APIIC, through PMU, shall submit the following safeguard documents to ADB for review and disclosure. 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:[7]

(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.

[7] 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."

28. **Consultation and Participation:** PMU and PIUs shall carry out meaningful consultation[8] 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.

29. **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.

30. **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.

31. **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.

32. **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.

33. **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, 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.

[8] 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

34. 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.

35. **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.

36. **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.

37. **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.

38. **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.

39. **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)

40. 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.

41. The Ministry of Environment, Forest and Climate (MoEF&CC), 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 (if 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).

42. In addition to the EIA Notification, 2006, there are a number of other acts, rules and regulations currently in force that could apply to VCICDP. Salient features and applicability of these legislations are provided in **Table 2**. This presents specific requirements for the project.

43. 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 likely to cause adverse 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. 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
Water (Prevention and Control of Pollution) Act, 1974	To control water pollution by controlling emission & Water pollutants as per the prescribed standards.	Control of Water pollution
Air (prevention and control of pollution) Act, 1981	To control air pollution by controlling emissions according to prescribed standards	Control of Air pollution
Environmental (Protection) Act, 1986	To protect and improve overall environment	Environment in general
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.
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.
Noise Pollution (Regulation and Control) (Amendment) rules, 2000 & 2010	Noise pollution regulation and controls	Control of Noise pollution
Environmental Impact Assessment Notification (as amended), 2006	Re-engineered EIA notification for a more effective Environmental clearance process	Applicable to the overall industrial park. EIA study conducted for entire industrial park, which include

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
		start up area, and submitted to MOEFCC Environmental Clearance is expected to be obtained by March 2023
Coastal Regulation* Zone Notification, 2011 (as amended)	To ensure livelihood security to the fishing communities and other local communities living in the coastal areas; To promote development in a sustainable manner based on scientific principles, taking into account the dangers of natural hazards in the coastal areas and sea level rise due to global warming.	Not applicable for ADB subproject activities.
Land Acquisition Act, 2013	Land acquisition and R&R as per applicable law and guidelines	In case of private lands in Nakkapalli industrial cluster
Hazardous Waste (Management and Handling) Rules, 2016	To store/handle hazardous waste and materials as per the provisions of the manufacturer, storage and import of Hazardous Chemical Rules, Hazardous Wastes (Management and Handling) Rules and Amendments	Appropriate handling of Hazardous Waste and Materials
Solid Waste Management Rules, 2016	For effective management of Solid waste	Control of Pollution due to Solid waste
E- Waste (Management) Rules, 2016	Management as a Consumer	Involvement of information technology And telecommunication equipment, electrical and electronics.
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/PHC proposed in I.P
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 principle 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	Applicable to all construction/civil works. APIICs to obtain Certificate of Registration. Contractors to obtain license from designated labour officer

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
	housing, medical aid, traveling expenses from home and back, etc.,	
The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996	• 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 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.	Applicable to any building or other construction work and employ 10 or more workers
The Child Labour (Prohibition and Regulation) Act, 1986	No child below 14 years of age will be employed or permitted to work in all the subproject.	No child below 14 years of age will be employed or permitted to work in all the 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
National Environment Policy (NEP), 2006	Project should adhere to the NEP principle of: enhancing and conservation of environmental resources and abatement of pollution	The policy governing the environmental rules and legislations and is applicable to all the subprojects.
National Environment Appellate Authority Act (NEAA) 1997	Grievances process and how they will be dealt with.	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	Applicable

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
	this act.	
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
Notification for use of fly ash from thermal power plants within 100km reaches of the project.	The MoEF&CC had issued in 2009 a notification that all brick units within 100km radius 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.	Applicable .
Public Liability and Insurance Act 1991	Protection from hazardous materials and accident.	Applicable
National Green Tribunal (NGT), 2010	Grievances process and how they will be dealt with.	Applicable when stakeholder approaches NGT
Explosive Act 1984 - For transporting and storing diesel, bitumen etc.	Safe transportation, storage and use of explosive material.	Applicable
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, rehabilitation and improvement of water supply. To be obtained prior to initiation of any work involving abstraction of groundwater	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
Companies Act, 2013 (under section 135 and sub-sections (1) and (2) of section 469) also called as Companies	According to Schedule 135 subsection 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	The project will need to comply with the requirement as stated in the law.

Applicable GoI Policies & Regulations	Objective	Reason for Applicability
(Corporate Social Responsibility Policy) Rules, 2014	made during the three immediately preceding financial years in pursuance of CSR policy.	
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

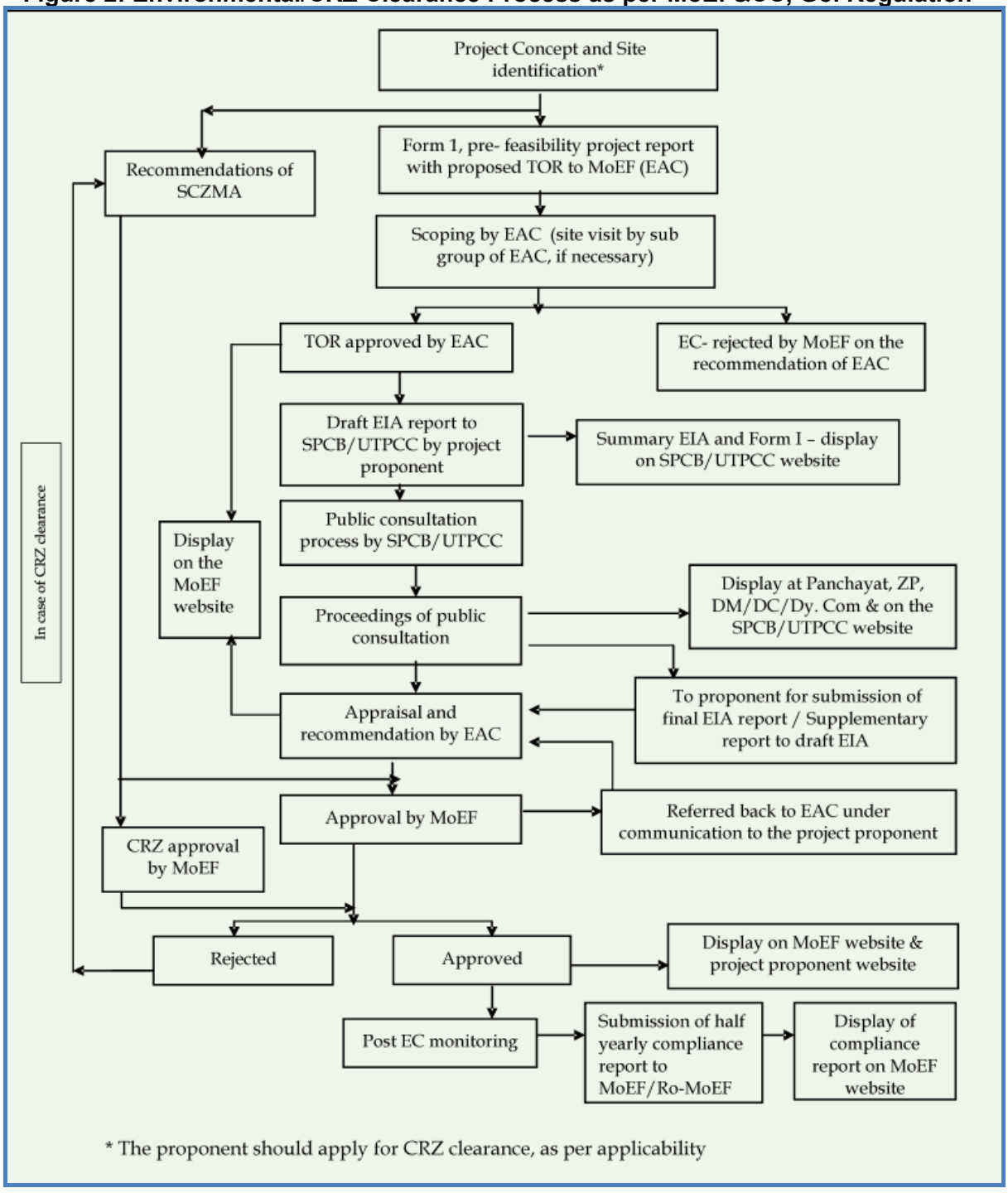
44. The EIA Notification, 2006, sets out the requirement for environmental assessment in India. This states that prior environmental clearance (EC) is mandatory for the development activities listed in its schedule and must be obtained before any construction work or land preparation may commence. Projects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

(i) Category A projects requires EC from MoEF&CC. The proponent is required to provide preliminary details of the project in the prescribed form, after which an Expert Appraisal Committee (EAC) of the MoEF&CCaccords comprehensive terms of reference (ToR) for the environmental impact assessment (EIA) study within 60 days. On completion of the study, Public Consultation will be held and review of the report by the EAC, MoEF&CC 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 prepares ToR for B1 projects within 60 days. On completion of the study, Public Consultation will be held 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 km or 10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

45. Nakkapalli industrial area in total is categorized under **Category A** due to overall master plan area will be more than 500 ha and the overall area also attracts CRZ notification, 2011 (as amended) as this involves marine outfall facility for disposal of treated effluent from Common Effluent Treatment Plant (CETP). The procedure for obtaining Environmental and CRZ Clearance is depicted in following Figure 2.

Figure 2: Environmental/CRZ Clearance Process as per MoEF&CC, GoI Regulation[9]



1. Status of Environmental Clearance of Nakkapalli Industrial Cluster:

46. APIIC has conducted the Environmental Impact Assessment in holistic approach covering entire master plan of Nakkapalli industrial cluster which contains the ADB funded start-up area. Therefore, Nakkapalli industrial cluster attracts EIA notification, 2006 for the industrial development and CRZ notification, 2011 (as amended) for the area and marine outfall falling under CRZ area.

[9]Source: ASCI EIA manual for marine projects

47. APIIC is in advanced stages of securing the Environmental Clearance for the proposed Industrial Park.

48. The timeline for obtaining Environmental Clearance is given below:

SL. No	Timeline	Nakkapalli
A	Date of ToR	12th June-2019
B	Date of Public Consultation and Public Hearing	25 November-2020
C	Date of NoC for Marine Outfall	17 August 2021
D	Date of Submission of CRZ Form-1 to APCZMA	25 August 2021
E	APCZMA approval and recommendations	Obtained 18 January 2022
F	Date of submission of Final EIA to MoEF&CC	Submitted April 2022
G	Expected date of EC	March 2023

D. International Environmental Agreements

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

Table 3: International Agreements and Applicability to Nakkapalli Subproject

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
2	Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal, 1989 To protect human health and the environment against the adverse effects of hazardous wastes. This aims at (i) reduction of hazardous waste generation, promotion of environmentally sound management (ii) restriction of transboundary movements, and (iii) a regulatory system for transboundary movements	Sludge/rejects generated from tertiary treatment process likely to have heavy metals and may fall in hazardous waste category. The sludge/rejects will be disposed within the country.

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

51. 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 recognized laboratory, and specific monitoring in case of public complaints.

E. ADB's Safeguard Requirement

52. 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

53. 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 will be 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 honored where this is seen as important.

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

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

55. 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
The quality of treated process wastewater from individual industries ETP, wastewater from utility operations or stormwater discharged on land, including wetlands, should be established based on local regulatory requirements	In case of STP at individual industrial units and treated water be used for land application, it shall meet the STP discharge standards stipulated by MoEF&CC/CPCB
Wastewater and 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	Industries shall follow the APPCB/CPCB

World Bank EHS Requirements	Compliance and Action Plan
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	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

56. The start-up area in the Visakhapatnam Node (North Block) in Nakkapalli Cluster of Visakhapatnam District under VCIC is spread over an area of 441 ha

57. The start-up area will have industrial manufacturing zones with the product mix comprising of Pharmaceuticals, Aerospace and Defence, General Purpose Machinery, Casting and Forging and Special Purpose Machinery. 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.

58. Utilities are planned and zoned across the project site. It will include water supply system, wastewater collection network and wastewater treatment facility, waste management facilities, power sub-station and distribution network. Based on the requirement, these facilities are spread across the project site.

59. This proposed start-up area development is expected to generate approximately 5540 direct employment.

60. **Proposed subproject under VCICDP Project 2**. APIIC proposes to develop the start-up area of 441 ha of land in Nakkapalli cluster, 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.

61. Under the VCICDP Project 2, road connectivity of Nakkapalli industrial cluster is will also be improved. A separate subproject[10] 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.

B. Proposed Project Site

1. Location

62. The project site covering an area of 1091.4 acres is located in Nakkapalli Mandal of Visakhapatnam district in Andhra Pradesh. The site is located at a distance of about 260 km north of state capital, Amaravati; 60 km south of Visakhapatnam, district headquarters.

63. The general project location in the state with regard to the major connectivity features is shown in Figure 3. The start-up area boundary with geo coordinates on google image is shown in Figure 4.

[10] Development of Road for External Connectivity to Nakkapalli Industrial Cluster (Package: VCICDP/APRDC/06)

Figure 3: Project Location

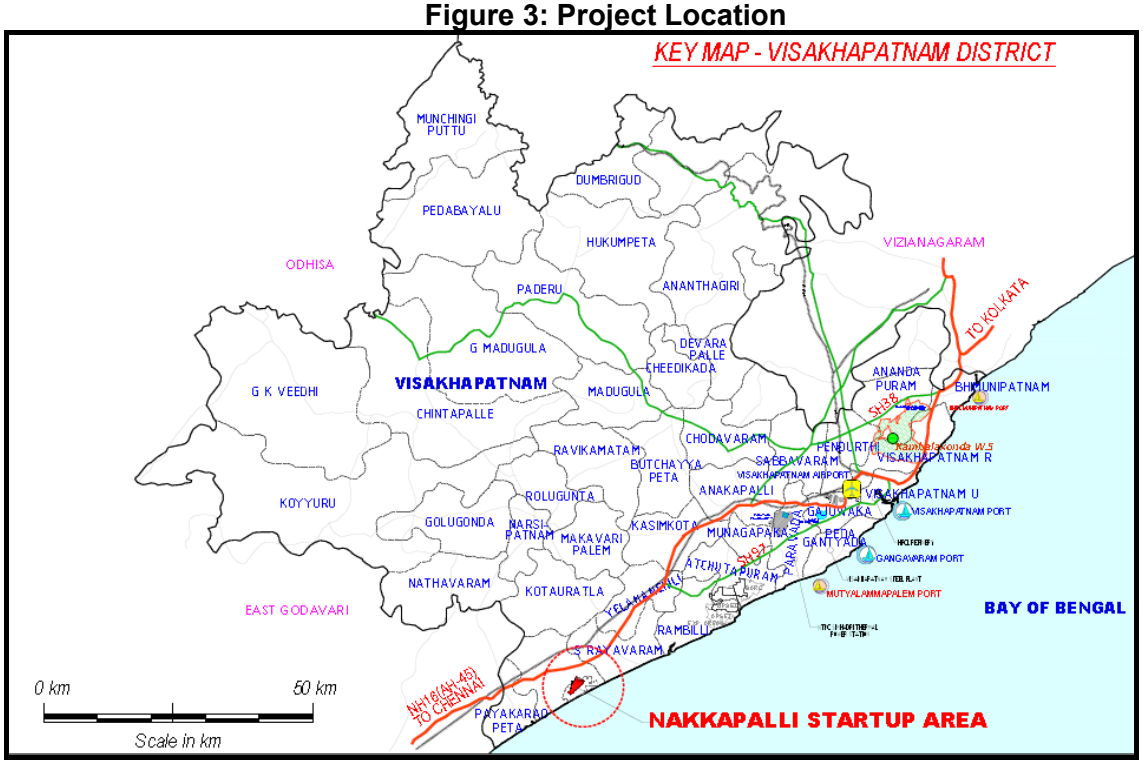


Figure 4: Project (Start-up) Area Boundary on Google Image

2. Connectivity

64. The project site is strategically placed in terms of connectivity to the hinterland markets. Presently site is connected through NH-16 at a distance of ~2.9km in the north direction. Gangavaram port is at a distance of ~61.5 km. nearest airport is located in Visakhapatnam at a distance of ~66.5 km from site in the northeast direction.

65. **Approach Road:** The Nakkapalli industrial site is served primarily by a major arterial road which leads to National Highway 16 at a distance of ~2.9km, which provides it with direct access to the city of Vishakhapatnam in the north-east and Kakinada in the south-west. There is an existing village road connecting the site to the NH-16.

Figure 5: Approach Road to Project site

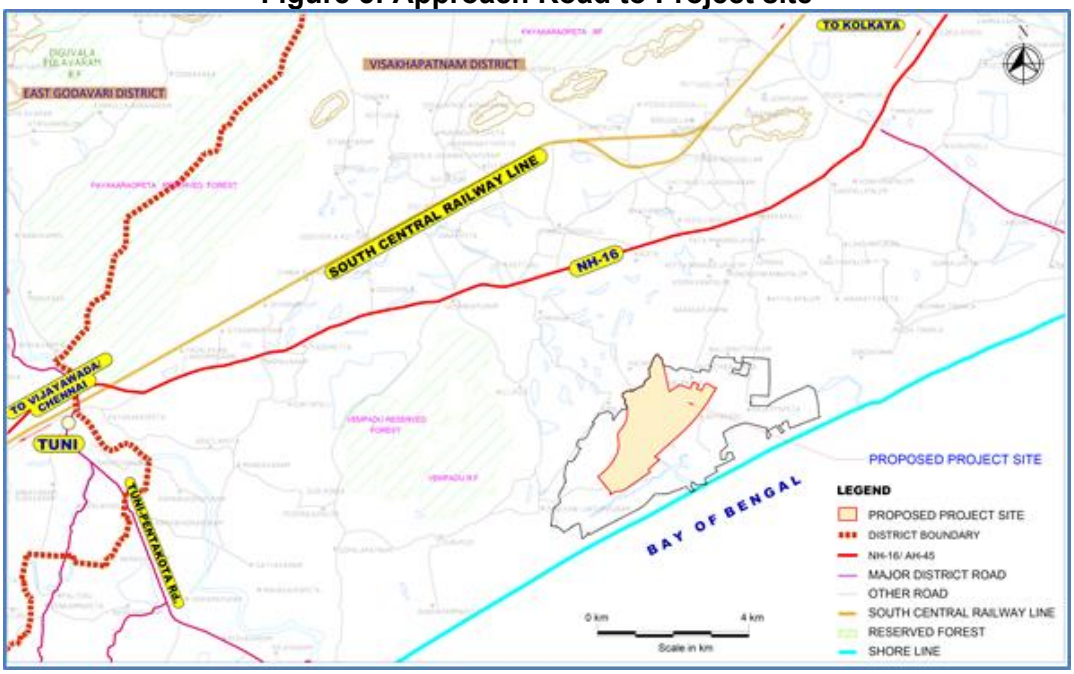


Figure 6: New Proposed Road to Project site

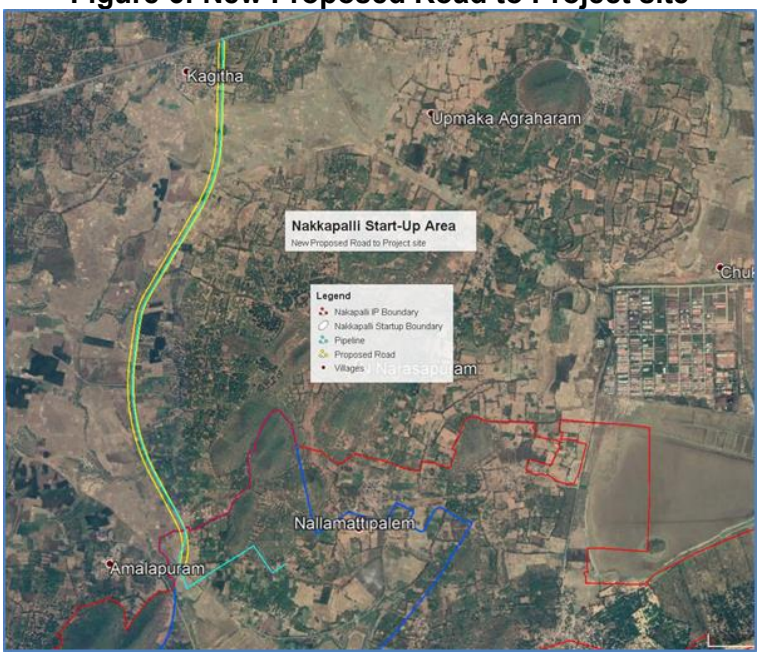
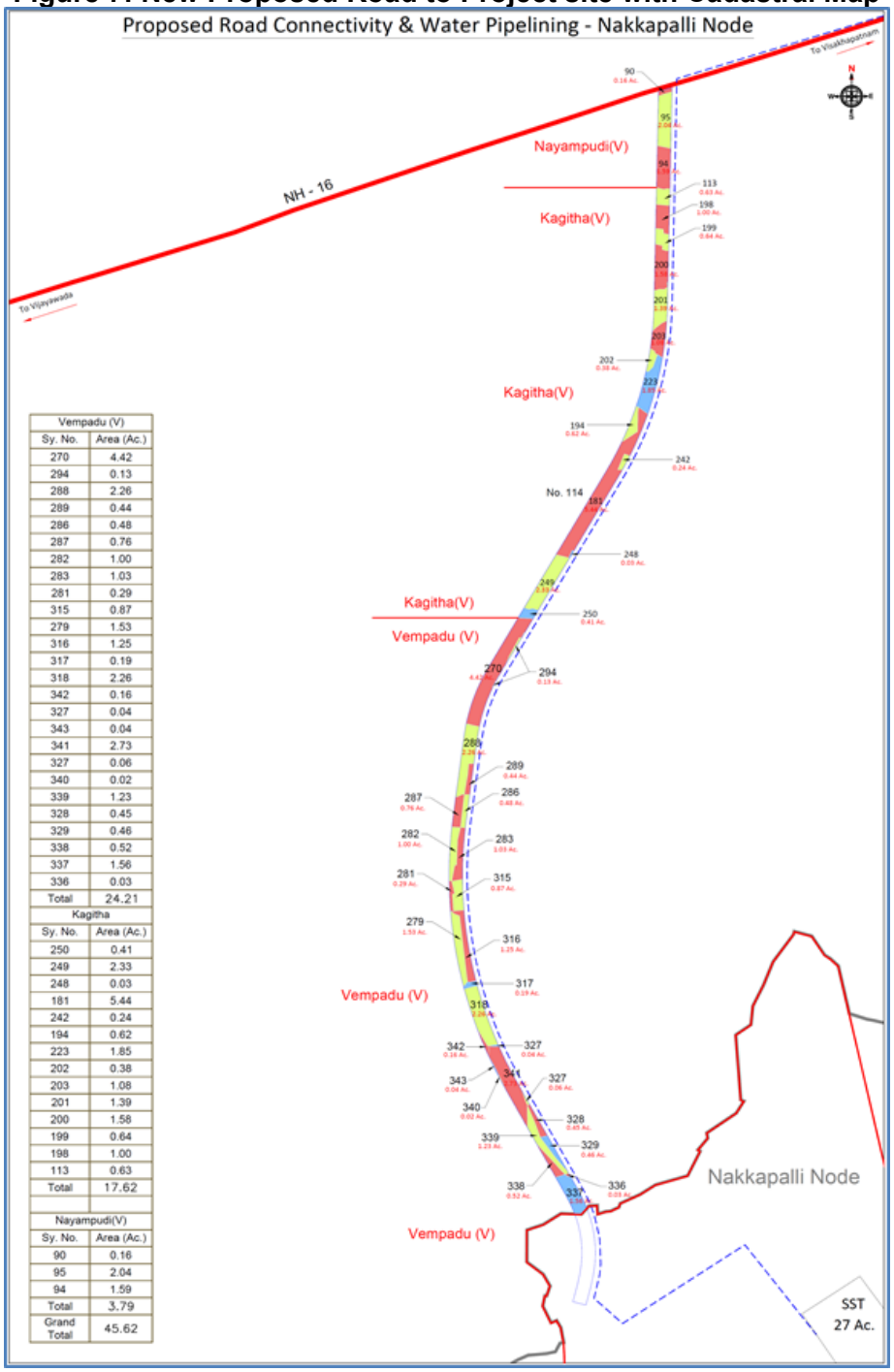


Figure 7: New Proposed Road to Project site with Cadastral Map



Vempadu (V)	
Sy. No.	Area (Ac.)
270	4.42
294	0.13
288	2.26
289	0.44
286	0.48
287	0.76
282	1.00
283	1.03
281	0.29
315	0.87
279	1.53
316	1.25
317	0.19
318	2.26
342	0.16
327	0.04
343	0.04
341	2.73
327	0.06
340	0.02
339	1.23
328	0.45
329	0.46
338	0.52
337	1.56
336	0.03
Total	24.21

Kagitha	
Sy. No.	Area (Ac.)
250	0.41
249	2.33
248	0.03
181	5.44
242	0.24
194	0.62
223	1.85
202	0.38
203	1.08
201	1.39
200	1.58
199	0.64
198	1.00
113	0.63
Total	17.62

Nayampudi(V)	
Sy. No.	Area (Ac.)
90	0.16
95	2.04
94	1.59
Total	3.79
Grand Total	45.62

3. Land use Planning

66. **Existing Land use Pattern:** The site is mostly comprised of agriculture, plantation; fallow; barren, un-cultural, wasteland/scrubland; water bodies and settlements located within the site.

67. **Proposed Land use:** Based on the spread and shape of the site, regional linkages, wind direction, the master plan is prepared. The settlements located within the project site are provided with 50m green buffer and pharma/chemical units will be 500 m away from settlements. The start-up area plan is given as Table 5.





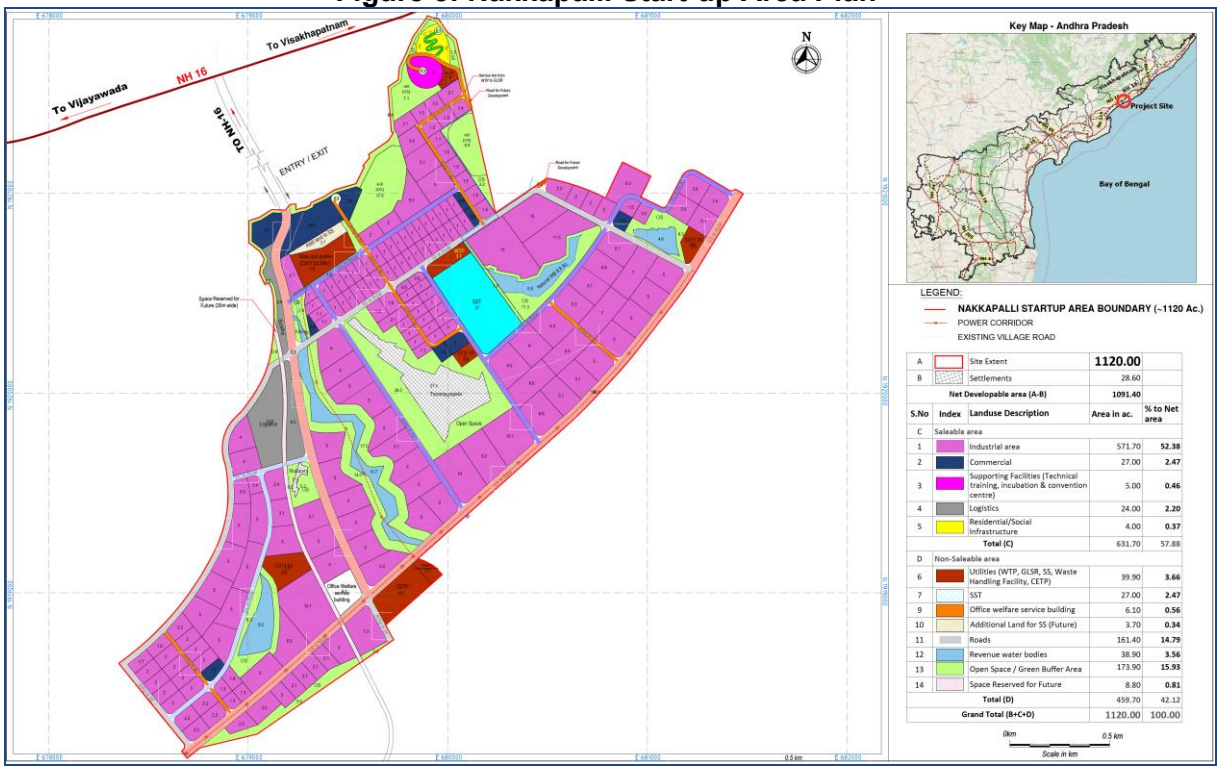



View of the site

Table 5: Proposed land use breakup in Start-up Area of Nakkapalli Cluster[11]

Sl. No	Type	Area (acres)	% to total area
A	**Site Extent**	**1120**	**100%**
B	**Settlements**	**28.60**	**2.55%**
	Net Developable area (A-B)	**1091.40**	**97.45**
C	**SALEABLE AREA**		
1	Industrial	571.70	52.38
2	Commercial	27.00	2.47
3	Supporting Facilities (Technical training, incubation & convention centre)	5.00	0.46
4	Logistics	24.00	2.20
5	Residential/Social Infrastructure	4.0	0.37
	Total C	**631.70**	**57.88**
D	**NON-SALEABLE AREA**		
6	Utilities (WTP, GLSR, SS, Waste Handling Facility,)	39.90	3.36
7	SST	27.00	2.47
8	Office Welfare Service Building	6.10	0.56
9	Additional Land for SS (Future)	3.70	0.34
10	Roads	161.40	14.79
11	Revenue Water Bodies	38.90	3.56
12	Open Space / Green Buffer Area	173.90	15.93
13	Space Reserved for Future	8.80	0.81
	Total D	**459.70**	**42.12**
	TOTAL (B+C+D)	**1120.00**	**100.00**

Figure 8: Nakkapalli Start-up Area Plan



[11] The land use break-up (Table 5) and plan (Figure 5) were initially prepared for startup area of 1120 acres or 453 ha. This will be updated with revised figures for finally agreed ADB funded startup area of 441 ha.








View of the site

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

68. The proposed subproject includes construction of the following components in the start-up area of Nakapalli industrial cluster (Table 6). The entire works shall be procured through a single works contract package. Further details of proposed infrastructure are presented in the following subsections.

Table 6: Subproject Components Proposed under ADB funded Project 2

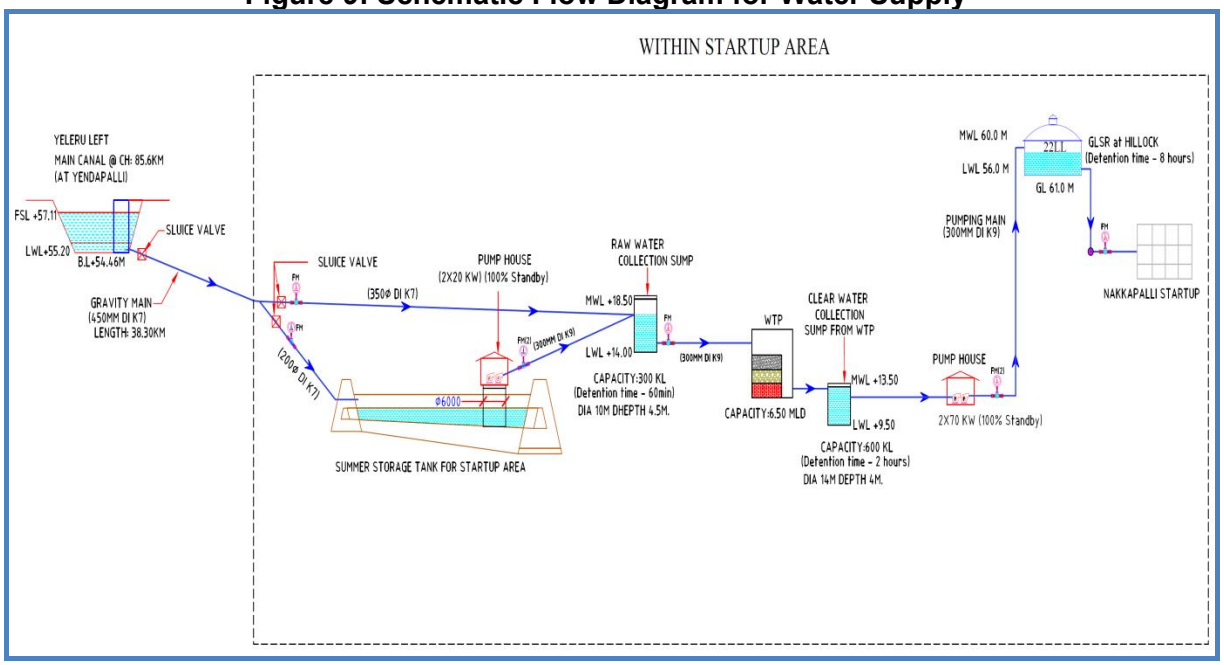
1	**Roads and drains**
(i) (ii)	21.93 km roads with 67 culverts, 2 minor bridges and a major bridge •Utility ducts, street lighting, road furniture, priority at grade junctions and pathways included for the entire length of the internal road network • Flexible pavements consisting of BC, DBM, WMM and GSB is designed as per IRC 37 – 2012 for the pavement life period of 15 years
(ii)	43.80 km storm water drains
2	**Water supply**
(i)	Offtake work at Yeluru Left Main Canal.
(ii)	Raw water transmission lines of 450 mm diameter DI K7 pipe 38.3 Km, 350 mm diameter DI K9 pipe 220 m, and 200 mm diameter DI K9 pipe 200m.
(iii)	Summer storage tank of 546 ML capacity to cater for 60 days of initial stage demand.
(iv)	300 KL raw water sump at WTP
(v)	Two pumps (1 working and 1 standby) of 20 KW and 300 mm DI K9 pipe of 550m length to pump water from SST to WTP.
(vi)	• 6.5 MLD water treatment plant • 600 KL sump, 2 (1working and 1 standby) 70 KW pump and 300 mm DI K9 pipes to pump water over a length of 1500 m to the Ground Level Service Reservoir • round Level Service Reservoir of 2200 KL capacity at hillock. • 24.36 km water distribution pipelines of DI K7 pipe of 100 mm to 400 mm diameter
3	**Power distribution**
(i)	• 2 Nos 33 KV Electrical substation, • 12.19 km 33KV UG cable, • 91.39 km, 11 KV UG cables, • internal power units • 7 high masts and 692 streetlights
4	**Green areas / land scaping**
(i)	Landscape and plantation works in green areas, environmental Monitoring, O&M of WTP.

1. Water Demand and Supply

69. The water demand of 6.5MLD will be met from the Yeleru Left Main Canal located north to site which is the main source of raw water. YLMC is at a distance of ~38 km north of the site. Raw water treatment plant is proposed within the cluster development. Minutes of Visakhapatnam Industry Water Supply Company Limited (VIWSCO) is attached. Letter from irrigation dept. is expected on the basis of these minutes. The Minutes are attached as **Appendix 1**.

70. The schematic flow diagram for developing the water supply system for the Start-up area is represented below figure.

Figure 9: Schematic Flow Diagram for Water Supply



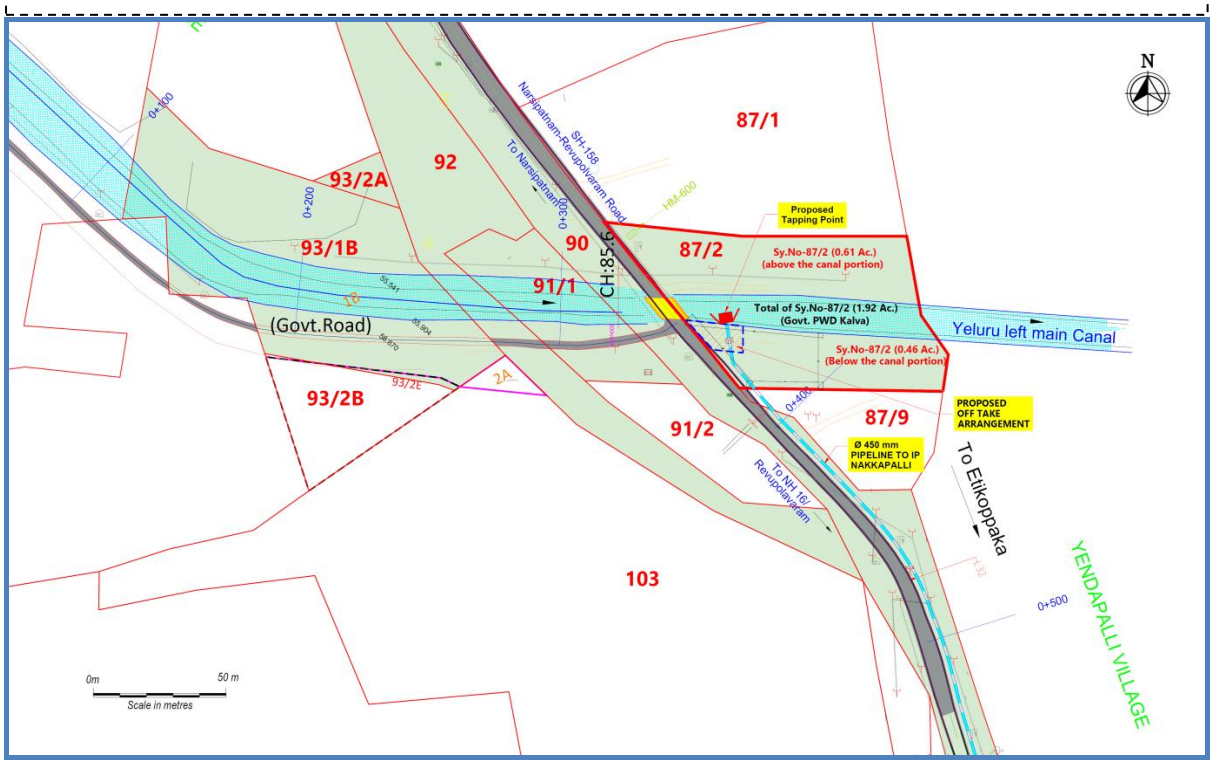
2. Structures at Intake Location

71. The bulk water supply to the Nakkapalli industrial cluster involves construction of around 38 km of pipeline for water connection to the project and to build this on the roadside (RHS & LHS) of NH 16 and along with other interrelated roads. Provision of adequate water supply is an essential infrastructure component that attracts industries. To propel industrial growth, APIIC has proposed to take up bulk water supply for Nakkapalli IP Project. The components of the bulk water supply to the prioritized industrial clusters in northern region include: (i) offtake works in Yeluru Canal at Yendapalli village of Kotavuratla Mandal, Visakhapatnam District at the starting point of the pipeline sub-project. (ii) Water supply pipeline of 26 km of stretch will be on LHS of SH-158 and 7 km of stretch will be on RHS of NH-16 and remaining 5km of stretch will be on LHS of new proposed road from Kagitha to start-up area.

72. It is proposed to adopt trenchless technology (specialized pipe jacking method) for pipeline to cross the canal bund and lay a gravity pipe of 800mm Ø DI Class K7 pipe from canal off take.

Figure 10: Proposed Site for Intake

Yeleru left main canal at ch: 85.60 Km near Yendapalli (Nh-16 to Narsipatnam road)



3. Gravity Main

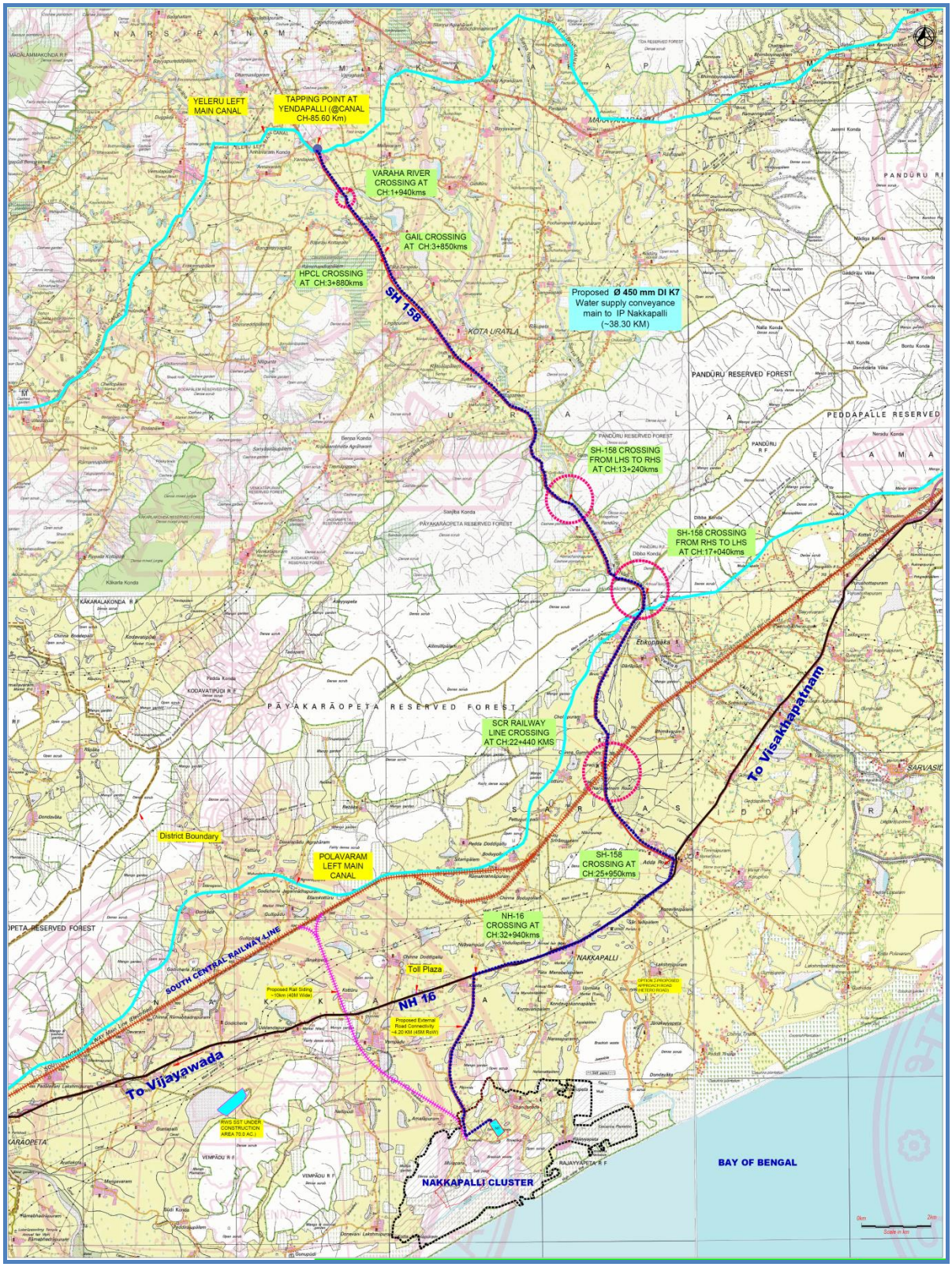
73. Based on the site visit, it is noted that Right of Way (RoW) is available along length of the alignment, without any major encroachments. The salient aspects of the proposal include:

(i) Diameter of the pumping main is of 450 mm DI-K7.
(ii) Length of the transmission gravity main is around 38.50 Km (till the proposed SST location).
(iii) Alignment is planned along the Narsipatnam Road from Yendapalli - NH16 near Adda Road, along NH16 from Adda road to Kagita village, proposed Approach Road from NH16 to Nakkapalli industrial cluster (APRDC road).
(iv) Railway crossing near Gummuluru
(v) NH-16 crossing near Adda road
(vi) Stream crossing near Sunkapuru and Polavaram canal crossing near Darlapudi.

(vii) ROW constraint is identified at one location (One side hill, other side river) for a length of approx. 1.50 km. The LHS & RHS of water pipeline has been provided in **Appendix 14**.

Figure 11: Water supply pipeline alignment from source to SST

RoW constraints for laying of pipe line along NH-16 to Narsipatnam R&B Road (One side hillock and other side river)



74. Yeleru Left Main Canal will be shut down for about 30 to 40 days in a year for annual maintenance. To achieve uninterrupted water supply to the proposed industries during canal maintenance, a storage tank is necessary. The storage tank will have a capacity to store water to cater for 60 days of projected water demand including losses due to evaporation and seepage.

75. As the overall area development may take time and considering the huge infrastructure cost; the summer storage tank will be developed in two phases; as a first step, it is proposed to develop the SST for the start-up area.

76. This will reduce the amount of water losses by evaporation. However, the land for the SST for overall area will be marked in the master plan for future needs.

Water requirement		
Water demand for Start-up Area	6.50	MLD
Summer Storage Requirements		
Storage period required for SS Tank	60	Days
Storage Capacity required including losses for 60 days	546	ML
Area required including bunds	27	Acres
First phase development of SST	27	Acres

4.1. Structures at SST

77. A pipeline of 300mm DI K9 for a length of 550 m is proposed for pumping water from SST to WTP. An Intake tower of 6.0m diameter is proposed inside the SST for pumping water from SST to WTP. These pumps will be operated as per the daily requirement so that the water circulation will take place and in any emergency conditions.

4.2. Pumps and Pumping Machinery

Pump sizing for Rising Main	Unit	Data
Gross water requirement	Cum/day	6500
Pumping hours		23.0
Design discharge	Cum/sec	0.08
Total pumping head	M	15.00
Combined Pump efficiency		75%
Size of pump	KW	9.55
Size of pump with 10 % overloading and 100% stand by	KW	20.00
Number of Pumps	No.	2 (1W+1S)

4. Water Treatment Plant

78. The raw water shall be transported from Yeleru left main canal near Yendapalli Village which at about 38.50 km from the project area. A 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”. It is proposed to develop the WTP for meeting the Start-up area needs (6.50 MLD).

79. The treatment scheme is as follows:

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

Table 6a: Water Standards

S No	Characteristics	Acceptable
1	Turbidity (Units on J.T.U scale)	2.5
2	Colour (Units on Platinum Cobalt scale)	5.0
3	Taste and Odour	Unobjectionable
4	pH	7.0to 8.5

S No	Characteristics	Acceptable
5	Total dissolved solids (mg/l)	500
6	Total hardness (mg/l) (asCaCO3)	200
7	Chlorides (asCl) (mg/l)	200
8	Sulphates (asSO4)	200
9	Fluorides (asF)(mg/l)	1.0
10	Nitrates (asNO3) (mg/l)	45
11	Calcium (asCa)(mg/l)	75
12	Magnesium (asMg)(mg/l)	>30
13	Iron(asFe)(mg/l)	0.1
14	Manganese (asMn) (mg/l)	0.05
15	Copper(asCu)(mg/l)	0.05
16	Zinc (asZn) (mg/l)	5.0
17	Phenolic compounds (asPhenol) (mg/l)	0.001
18	Anionic detergents (mg/l) (asMBAS)	0.2
19	Mineral Oil (mg/l)	0.01
20	Arsenic (asAs) (mg/l)	0.05
21	Cadmium(asCd)(mg/l)	0.01
22	Chromium(ashexavalentCr) (mg/l)	0.05
23	Cyanides(asCN) (mg/l)	0.05
24	Lead (as Pb) (mg/l)	0.1
25	Selenium (asSe)(mg/l)	0.01
26	Mercury (total as Hg) (mg/l)	0.001
27	Polynuclear aromatic hydrocarbons (PAH)	0.2ug/l
28	GrossAlphaactivity	3pCi/l
29	Gross Beta activity Pci =picocurie (Guideline Values for Bacteriological Quality organism)	30p Ci/l
30	Piped water supplies (treated water entering the distribution system)	
30.1	Faecal coliformsnumber/100ml	0
30.2	Coliform organisms' number/100ml	0

5. Clear Water Sump

80. The capacity of the clear water sump is designed/maintained such that, adequate buffer is made to have a balance between WTP (from source) and pumping to service reservoirs (to distribution). Though, Central Public Health and Environmental Engineering Organization (CPHEEO) manual do not specify guidelines for capacity of clear water storage reservoirs, however, considering the WTP operation hours and reliability, storage capacity (600 kl) having 2 hours retention time of total demand is proposed.

GL	13.5	m
Elevation Base	13.5	m
Total Daily Water Supply	6.78	MLD
23 hr pumping		
Hourly Supply	282.5	cum/hr
Say the final capacity of tank is	600.00	KL

6. Pumping Machinery

81. 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 Ground level service reservoir (GLSR) at hillock (~GL +56.00m).

82. The details of pump sizing for clear water requirement of 6.5 MLD are as below:

Pump sizing for Rising Main	Unit	Data
Clear water requirement	Cum/day	6.500
Pumping hours		23.0
Design discharge	Cum/sec	0.075
Total pumping head	M	60.00
Combined Pump efficiency		75%
Size of pump with 100% stand by	KW	70
Number of Pumps	No.	2(1W+1S)

7. Feeder main from WTP clear water sump

83. Economic sizing of pumping main has been carried to arrive at pipe diameters and to arrive at required pressure head at designated GLSR. It is proposed for 300mm DI K9 pipeline from CWS near WTP to proposed GLSR at hillock for an approx. length of 1500.00 m.

8. Energy/Power & Source

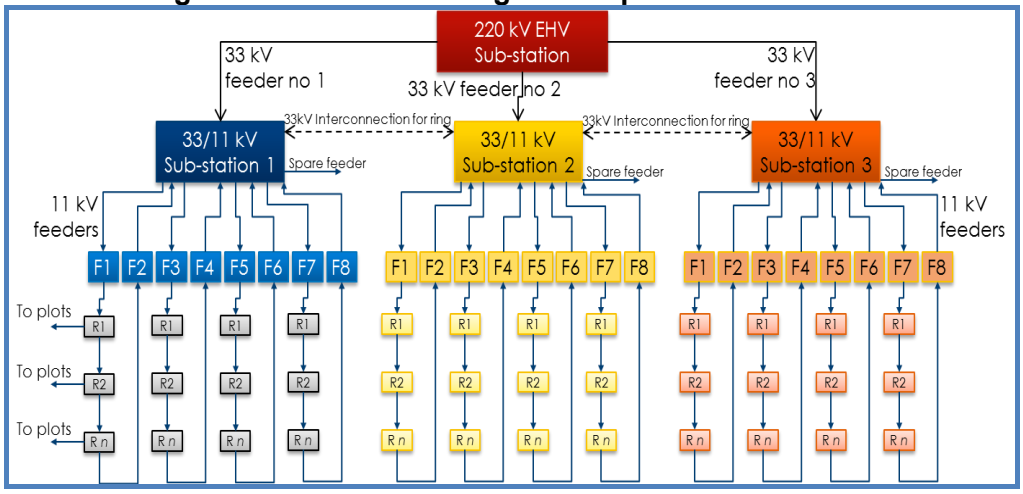
84. The power demand estimated for various uses in the start-up area for Nakkapalli is 38.0mVAthe incoming power supply will be drawn from the nearest 220/132/33 kV substation through a 33 kV underground (UG) XLPE cable up to 33/11kV substations proposed within the startup area.

85. It is proposed to supply the power through three 33/11kV substations to users/ industrial plots. The locations of these substations are shown in the figure based on the load center.

86. 33 KV feeders from 220/132/33 kV as incoming source will be connected to each 33/11kV substations through 33KV 300 sqm UG cable which will be laid in cable trenches running by the side of the road. It is proposed to provide 11kV supply, for the estimated load shown in Figure 8-1 to plots connected through 11kV 300 sqm UG cable through 5-way Ring Main Units (RMU) with looping connected to a feeder system.

87. The RMUs are numbered as R1, R2, R3, etc. and 11kV feeders are numbered as F1, F2, F3, etc. and Sections as Sec 1, Sec 2, Sec 3, etc. for each 33/11kV SS. The system has also provision of interlinking with other sections in case of failure of respective section feeders this will enable uninterrupted power supply to the end users.

Figure 12: Schematic diagram for power distribution



9. Wastewater Management

The domestic wastewater generated in the industrial park along with the industrial effluents shall be treated CETP to be developed using DBFOT mode by APIIC (Refer Appendix-17). 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.

10. Solid Waste Management

88. It is estimated that ~6.73 TPD of MSW and ~37.1 TPD of industrial waste (hazardous waste of 18.5 TPD, non-hazardous waste of 11.2 TPD and recyclable waste of 7.4 TPD) will be generated from the proposed I.P. The municipal solid waste shall be disposed to APPCB approved vendors by respective industry.

89. The industrial solid waste generated daily shall be collected via trucks and transported to the proposed collection point (Transfer Station). This station receives loads of processable solid waste in varying sizes and consolidation takes place into tractor/trailer size loads and then the larger loads are transported to the landfill site.

90. A TSDF is being proposed to be developed by APIIC for common utilization of industrial parks developed and under development in Visakhapatnam region. This TSDF will serve the requirement of Nakkapalli I.P and until it is operational, it is proposed to use the existing nearby TSDF site (M/s. Coastal Waste Management Project), at Sy. No. 183, 53/P, JN Pharma city, Road No.13, Parawada Mandal, Visakhapatnam, Andhra Pradesh 531019. Latitude and longitude 17°38'44.38"N&83° 4'56.91"E. Facility is in operation. Consent Order was obtained in 25.02.2017 and valid till date. JNU Pharma city TSDF has secured landfill capacity of 2.0 Lakhs TPA and Incinerator capacity of 5.5 MKCal.

D. Proposed Components to be funded by Government of Andhra Pradesh (GOAP)

91. 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 6b: Components proposed under GOAP / Other funding

Components	Description
Wastewater Conveyance system	26.54 km wastewater collection network of DWC pipe of diameter 170mm to 400 mm, an intermediate pumping station with two 7.5 KW pump sets (1 working and 1 standby), 1000 m long pumping main of 200 mm DI K9 pipe and 160mm UPVC plot connections.
Common Effluent Treatment Plant (CETP)	Common Effluent Treatment Plants with two units of capacities 0.65 MLD (unit 1 - pharma) and 1.39 MLD (unit 2- non pharma) with marine outfall. APIIC shall be constructing CETP using the DBOFT mode (Refer Appendix) after construction of the internal infrastructure in accordance with the MOEFCC Environmental Clearance requirements.
Administrative / service building	15615 square feet welfare service building
Ready Built Factories	63500 square feet flatted factory complex.

Other common facilities	As required to operationalize the industrial park

92. **Establishment of industrial, commercial, logistics and services:** APIIC on its part develops industrial parks, in this case Nakkapalli industrial cluster 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.

93. 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.

94. **Industrial area management.** APIIC is responsible for the establishment, 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.,

95. 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 is in the process of obtaining 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.

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

96. **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. 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 authorized 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). An existing nearby TSDF site (M/s. Coastal Waste Management Project) in Parawada Mandal in Visakhapatnam wil be utilized. Facility is in operation. Consent Order was obtained in 25.02.2017 and valid till date. APIIC will obtain consent of TSDF 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.

E. Proposed Implementation Schedule

97. 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).

98. 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

99. 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 level, tourism, cultural resources etc.) which are likely to be affected (direct or indirect) by the proposed Nakkapalli industrial area project are covered. These aspects are covered in broader geographic extent to present the entire project region.

100. Visakhapatnam district as the Project Influenced Area (PIA) District and 10 km radius as general study area is considered. As a primary requirement of the environmental and social screening process, the Core Study Area (CSA) will be subproject site.

A. Physical Environment

101. **Topography:** The district can be divided into three regions, viz., Northern hilly terrain with valleys, Middle Pedi plains and Alluvial coastal plains. The northern half of the district is mainly occupied by the structural hills and valleys, which is part of the Eastern Ghats. The average altitude of hills is over 900 m amsl. The hill range trends parallel to coast. The present site located in the Alluvial coastal plains having an altitude of less than 100 feet.

102. **Soil Type:** The different soils in the district are Red soils with rocks & pebbles 93% followed by Sandy loams (4.85%) and Black cotton soils with (1.70%). Sandy loamy soils are largely confined to the coastal areas/. Sandy loamy soils are occurred in present site.

103. **Climate:** Climatologically the district experiences tropical sub-humid type of climate with moderate summer and good seasonal rainfall. The southwest monsoon sets in the second week of June and lasts till September end. October and November receive rainfall from northeast monsoon. Winter season with cool and fine weather prevails from December to February followed by summer season up to early June.

104. **Temperature:** The Temperature goes down with the onset of Southwest Monsoon and tumbles to a mean minimum of 17.5º C by January after which the temperature rises and reaches mean maximum of 38ºC by the end of May. Temperature reaches 43ºC to 44ºC in the hottest months. Temperature shows marked fall especially in the interior areas. However, in the plains, the temperature generally touches 40ºC in summer while it comes down to 18ºC in the winter. In the hills, the minimum temperature in the winter fluctuates from 7ºC to 15ºC.

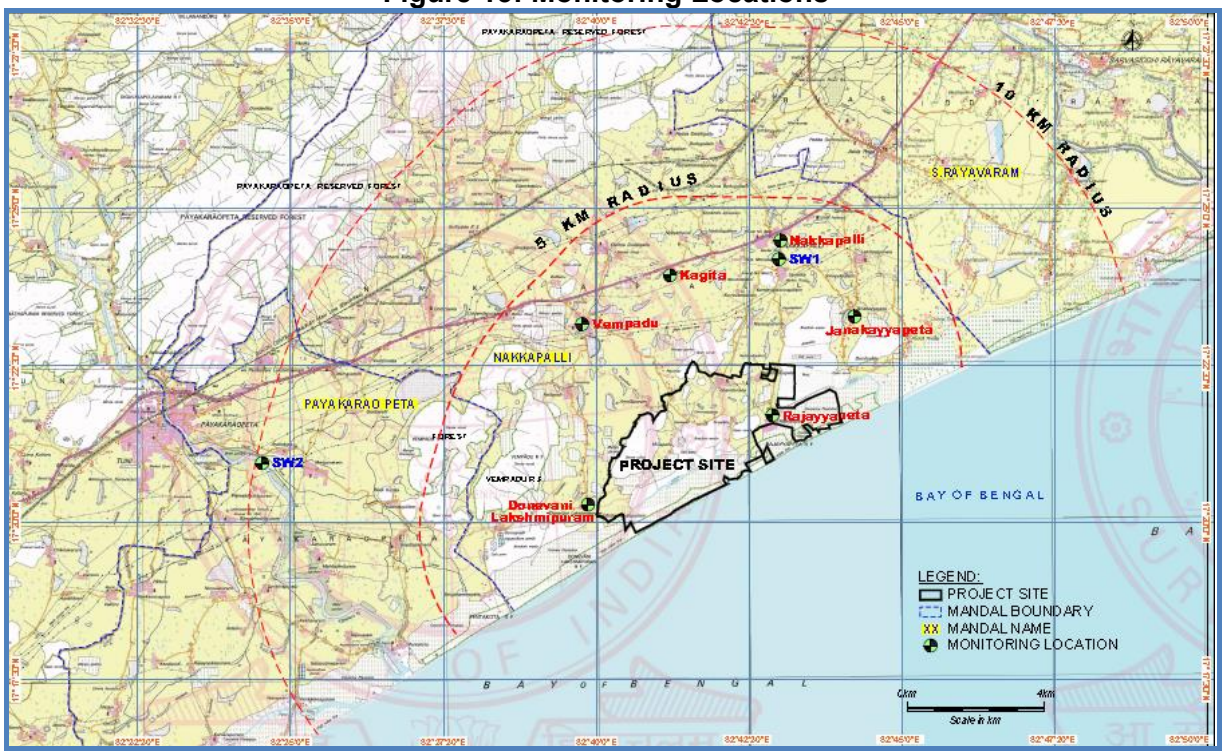
105. **Rainfall:** The district receives annual normal rainfall of 1082.5 mm of which south-west monsoon accounts for 59.8% of the normal while North-East monsoon contributes 15.2%. The rest is shared by summer showers and winter rains. Agency and inland areas receive larger rainfall from the southwest Monsoon, while Coastal areas get similarly larger rainfall from North-East monsoon. But both the monsoons play variations. The upper hill ranges like Minumuluru receive an average annual rainfall of about 2000 mm.

106. **Water Resources:** As per the present ground water resource estimation (2008-2009) the total annual ground water recharge in the district is estimated to be 78,383 ha.m. Depth to water levels varies from 5 to 10 mbgl, except at Chintapalli, where water level recorded 15.78 mbgl. In the southern part of the district i.e., near to the coast, the water levels are comparatively shallow (<5.00m) except in Payakaraopeta and Nakkapallimandals where it is in between 5 and 10m bgl.

107. **Earthquake Zone:** The project area falls under seismic zone II, least active seismic zone.

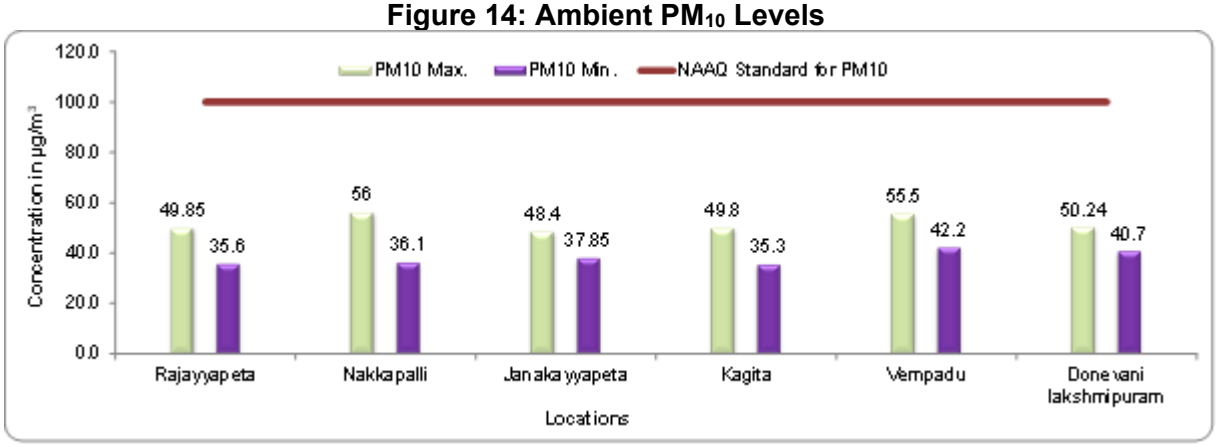
108. As a part of EIA study, baseline environmental studies were carried out for terrestrial and marine environment covering 10 km radius from the Nakkapalli industrial area. The baseline environmental surveys were carried out in Summer Season, 2018 and analysis was completed and provided in the draft EIA. Results of the same has been included in the IEE. The baseline environmental sampling locations are shown in Figure 13.

Figure 13: Monitoring Locations



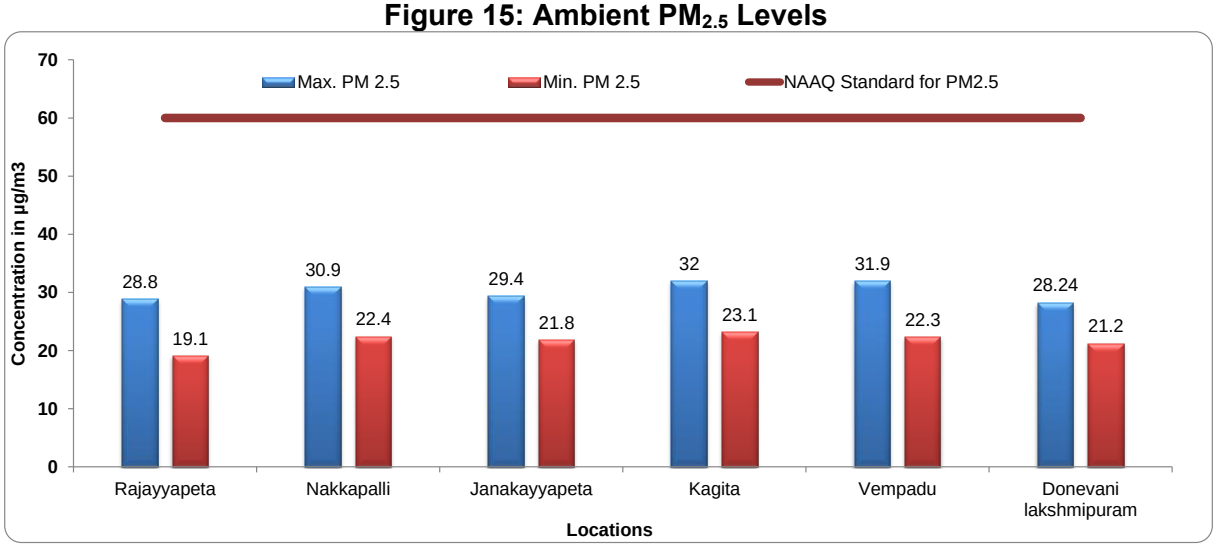
109. **Ambient Air Quality**: As a part of EIA study, ambient air quality was monitored as per CPCB/MoEF&CC guidelines. The location has been identified with regard to the predominant wind direction, topography, population, sensitive locations, and possible impact zones. Ambient Air Quality monitoring was carried out at ***Six (06) locations*** in the study area with twice a week frequency during the study period. Ambient air quality monitoring was done for establishing background concentration levels. The measurement was carried out for establishing 24-hourly background concentrations for all parameters except CO and O_3 which will be measured on an eight hourly basis on each monitoring day. Ambient Air Quality Monitoring results are given graphically given in Figure 14 to 16. All parameters are well within the NAAQ standards. Following requirements of ADB SPS, the subproject shall apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in EHS Guidelines. When the government regulations differ from these levels and measures, the subproject shall achieve whichever is more stringent. For such cases where the levels exceed EHS requirements, PMU will take alternatives measures and monitor and report environmental performance regularly to be consistent with the requirements presented in ADB SPS.

Figure 14: Ambient PM_{10} Levels



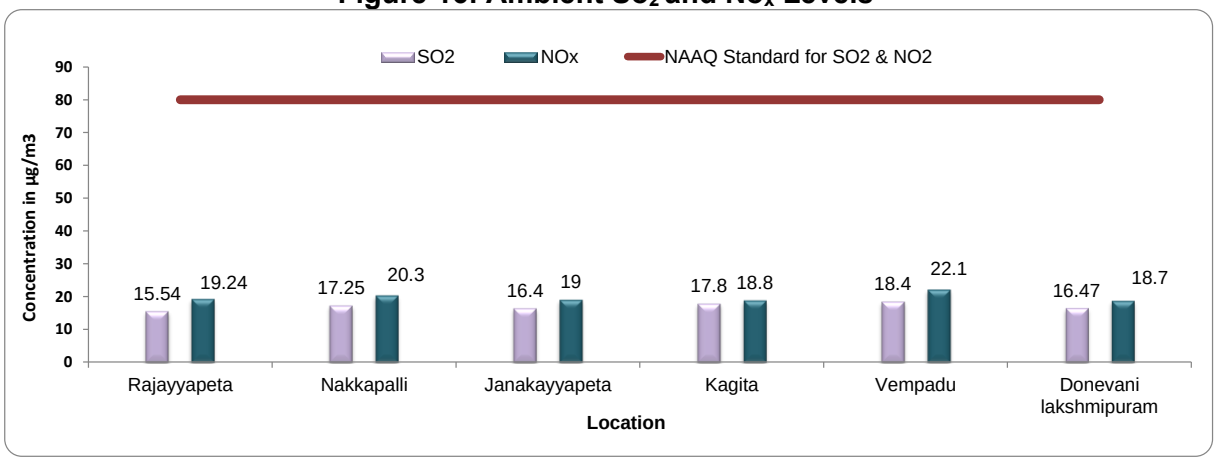
Source: Baseline study conducted as a part of EIA preparation in 2018

Figure 15: Ambient $PM_{2.5}$ Levels



Source: Baseline study conducted as a part of EIA preparation in 2018

Figure 16: Ambient So_2 and No_x Levels



Source: Baseline study conducted as a part of EIA preparation in 2018

110. **Ambient Noise Levels:** Noise level was measured at ***Six (06) locations*** within the study area. Representative intensity of the noise levels (Peak noise and Equivalent noise levels) in the study area was measured at hourly intervals for 24 hours once during the study period. Noise level measurement was carried out as per the IS: 4954-1968 as adopted by CPCB, CPCB/IS: 4954-1968 and the CPCB/ OSHA Standards using a precision noise/sound

level meter. The comparison of day equivalent noise levels (Ld) and night equivalent noise levels (Ln) with the respective CPCB stipulated standards for various land use categories are presented in Figure 17 and 18. Day and night equivalents are well within the ambient noise standards.

111. Following noise monitoring locations in the study area were selected after giving due consideration to the various land use categories.

S No	Location	Distance (Km) from Project Boundary	Azimuth Directions	Environmental Setting
1	RajiyyaPetta	Within Site	Within Site	Residential
2	Donevani Lakshmipuram	0.3	W	
3	Janakayyapeta	2.3	NE	
4	Vempadu	3.2	N	
5	Kagita	2.6	N	
6	Nakapalli	3.6	N	Industrial

Figure 17: Ambient Day time Noise levels

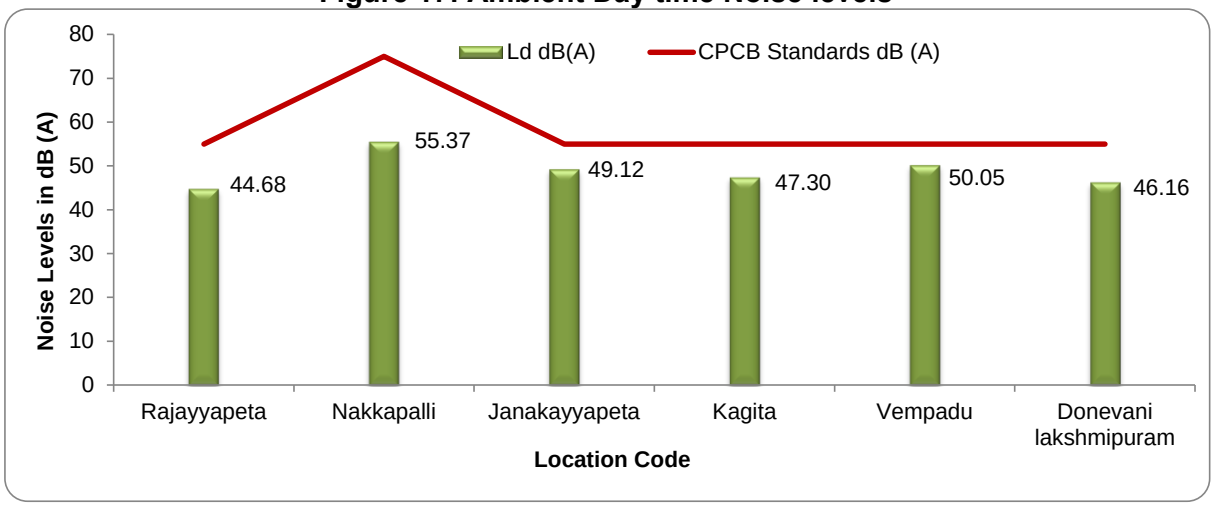
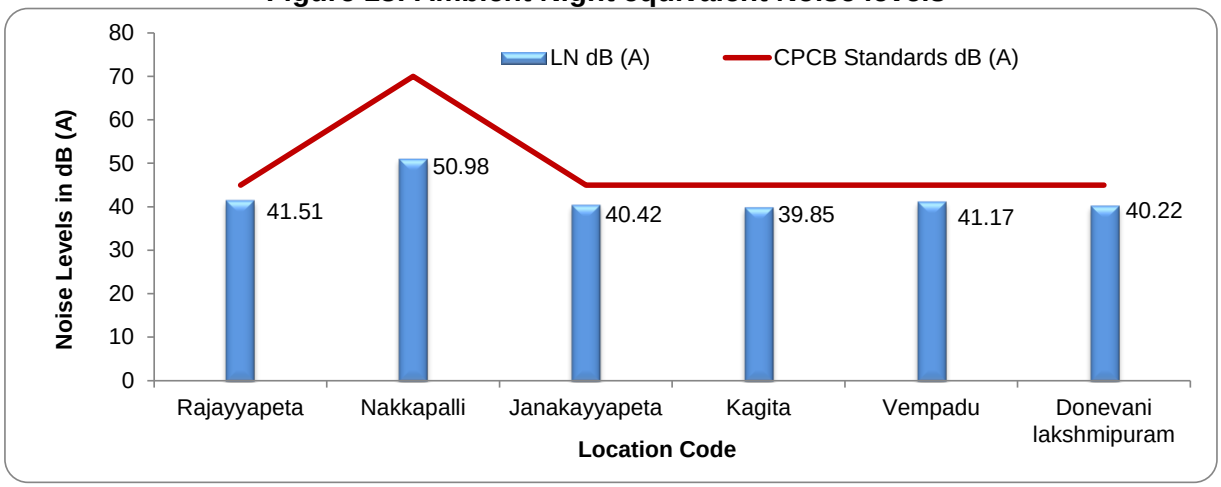


Figure 18: Ambient Night equivalent Noise levels



Source: Baseline study conducted as a part of EIA preparation in 2018

112. **Inland Water Quality:** The study area was first inventoried for identifying the sources of water i.e., both surface water and groundwater sources. Water samples were collected at the identified sources based on the type of the source, its relevance, number of upstream and downstream users and the type of the industrial activity in the vicinity. Water Quality including ground water and surface water was monitored at Six (06) locations (3 surface water and 3 groundwater). Existing groundwater levels in nearby areas shall be identified. The water samples were collected and analysed, for physio-chemical and biological characteristics. Water Quality was monitored adopting procedures as per IS 3026 and relevant guidelines of MoEF&CC/ CPCB. A summary of ground water analytical results is presented below:

(i) pH ranged between 7.11 and 7.72
(ii) Electrical Conductivity (EC) varied between 1410 µS/cm and 1690 µS/cm
(iii) Total hardness (as $CaCO_3$) ranged between 285.65 mg/l and 348.17 mg/l
(iv) Fluorides as (F^-) ranged between 0.37 mg/l to 0.74 mg/l
(v) Total phosphorous, Phenolic compounds, BOD, Cadmium (Cd), Chromium (Cr^{+6}), Cyanides (CN), Mercury (Hg) are observed to be well below the desirable limit and Coli forms not detected at all locations.

113. **Soil Quality/Land Environment:** The soil types in the study area were identified based on the review of the available data supported with information gathered from reconnaissance survey. Soil samples were collected at Six (06) locations. The collected samples were analysed for physio-chemical characteristics. Soil quality monitoring and analysis was carried out as per the BIS Standards. A summary of results are presented below:

(i) pH of soils ranged between 7.05and 7.55 showing neutral to slightly alkaline nature
(ii) Electrical Conductivity varied between 275 µmhos/cm and 425 µmhos/cm mostly harmful for germination and crops.
(iii) Nitrogen varied between 125.46 kg/ha and 212.83 which shows good and better levels in soil quantity
(iv) Potassium (K) varied between 164.66 kg/ha and 230.08 kg/ha which shows medium levels in soil quantity
(v) Phosphates as PO_4^{-2} varied between 80.20 kg/ha and 141.59 kg/ha which shows sufficient to more than sufficient in soil quantity
(vi) Infiltration Rate ranged between 1.4cm/h and 2.3 cm/h
(vii) Water Holding Capacity varied between 19.54 % and 28.13%
(viii) Bulk density varied between 1.11 gm/cc and 1.62 gm/cc
(ix) Zinc (Zn) varied between 18.8 mg/kg and 25.32 mg/kg
(x) Iron (Fe) varied between 12620.00 mg/kg and 16452.00 mg/kg
(xi) Manganese (Mn) varied between 95.6 mg/kg and 120.8 mg/kg
(xii) Chromium (Cr) varied between 2.58 mg/kg and 5.48 mg/kg
(xiii) Nickel (Ni) varied between 5.89 mg/kg and 10.25 mg/kg

B. Biological Environment

1. Terrestrial Ecology:

114. **Vegetation:** In the districtthe forests cover 39% of the total geographical area of the district, of which Southern Tropical Dry Deciduous Forests covers 40.31%, Southern Tropical Dry Thorny Forests covers 28.15%, Southern Tropical Semi-Evergreen Forests covers 11.80%, Southern Tropical Dry Evergreen Forests covers 10.80%, Southern Tropical Moist Deciduous Forests covers 8.32% and Beach Forests covers 0.60%. Major forest flora of the district includes:

(i) **Trees:** *Boswellia serratta, Anogeissus latifolia, Pterocarpus marsupium, Cassia fistula, Artocarpus integrifolia, Grewia asiatica, Lagerstormia parviflora &Dalbergia latifolia.*
(ii) **Bamboos:** *Bambusaarundinacea, Dendrocalamusstrictus.*
(iii) **Shrubs and Herbs:** *Wood-fordia floribunda, Rauwolfia serpentina, Cipadessafruiticosa, Eupatorium sp., Holarrhenaantidysenterica, Castusspeciosus, Strobilanthus spp., Clerodendroninfortunatum.*
(iv) **Grasses:** *Aristida setacea, Chysoleena maxima, Eulaliopsisbinata, Cymbopogon contortus etc.*
(v) **Climbers**: *Butea superba, Bauhinia vahili, Spatholobusroxburghii, Acacia intsia*

115. **Reserve Forest in Study area:** The following are the reserve forests falling in the study area of 10 km radius and project site does not contain any forest area. No impacts envisaged on any forest area due to development of internal infrastructure in the start up area.

S. No.	Reserve Forest	Distance/Direction from the site
1	Vempadu R.F	1.6 km; NW
2	Payakaraopeta R.F	8.4 km; N
3	Pentakota R.F	3.7 km; SW
4	Kotta PolvaramR.F	4.7km; NNE
5	DonivaniLakshimipuram R.F(Casuarina shelterbelt plantation)	Abutting the coast towards south of project site
6	Rajayyapeta R.F(Casuarina shelterbelt plantation)	

116. **Wildlife Sanctuaries/national parks**: There are no declared wildlife sanctuaries/national parks, biosphere reserves in the 10 km radius of study area.

117. Project area mainly consists plain terrain gently sloping towards the Bay of Bengal in the east. Site comprises of agricultural plantation, crop land, scrub land, aquaculture areas and two settlements. The Environmental Sensitivity details as defined by MoEF&CC were collected in the 10 km radius of Nakkapalli industrial area and given in Table 6.

Table 6: Environmental Sensitivity in 10 km radius as per MoEF&CC format

S. No.	Areas	Yes/No	Name/Identity Aerial distance (within 10 km) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Yes	(i) Gopalapatnam Buddhist Site – 5.7 km; W
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Yes	**Reserved Forest:** (ii) Rajayyapeta R.F - Coastal side, South (iii) DonivaniLakshmipuram R.F - Coastal side, South (iv) Vempadu R.F – 1.6 km; NW (v) Payakaraopeta R.F – 8.4 km; N (vi) Pentakota R.F – 3.7 km; SW (vii)RF near Kotta Polvaram – 4.7km; NNE **Water Bodies:** (viii) Bay of Bengal – Abutting (ix) TandavaNadi – 6.9 km; SW

S. No.	Areas	Yes/No	Name/Identity Aerial distance (within 10 km) Proposed project location boundary
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	-
4	Inland, coastal, marine or underground waters	Yes	(x) Bay of Bengal – Abutting (xi) TandavaNadi – 6.9 km; SW
5	State, National boundaries	No	-
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Yes	(xii)NH 16 (AH 45) - ~2.9 km; N (xiii) SC railway Line – ~5.2 km; N
7	Defence installations	No	-
8	Densely populated or built-up area	Yes	(xiv) Nakkapalli - ~3.4 km; N (xv) Tuni - ~12 km; W
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	(xvi) Nakkapalli - ~3.4 km; N, (xvii) Tuni - ~12 km; W (xviii) Gopalapatnam Buddhist Site – 5.7 km; W (xix) Venugopalaswamy Temple Tuni - ~12.9 km; W
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Yes	(xx) Rajayyapeta R.F – Coastal side, South (xxi) DonivaniLakshmipuram R.F- Coastal side, South (xxii) Vempadu R.F – 1.6 km; NW (xxiii) Payakaraopeta R.F – 8.4 km; N (xxiv) Pentakota R.F – 3.7 km; SW (xxv) RF near Kotta Polvaram – 4.7km; NNE (xxvi) Gopalapatnam Buddhist Site – 5.7 km; W (xxvii) Venugopalaswamy Temple Tuni - ~12.9 km; W
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	No	Nil
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 II (Low Damage Risk 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.

C. Marine Environment

118. The marine environment of this region is influenced by 3 climatic conditions, viz., southwest monsoon (June – September), northeast monsoon (Mid October to Mid-February) and fair-weatherperiod (March to May). This part of the coast is influenced more by both southwest and northeast monsoons. The area is generally dry and barren with the

accumulation of sand deposits. The coastal vegetation consists of Casuarina, Coconut and Cashewplantation in patches along the coastal stretch. *Ipomea pes-caprae* and *spinifex littoreus* are common on sand dunes which are noticed in patches. The coastal region is predominantly a sandy beach. Physical and chemical parameters of marine water quality analysis show seasonal changes.

(i) The common phyto-planktons include *Nitzschiaseriatea* and *Thalassiothrixfrauenfeldii*.
(ii) The dominant zooplankton species include *Copepod nauplii*, *Tintinnopsistubulosa*and *Copepod nauplii,Tintinnopsis.*
(iii) Macrobenthos includes Polychaetes, Bivalves, Gastropods, Amphipods and Isopods and Meiobenthos represented by Nematodes, Foramineferans and Ostracods.
(iv) *Finfish* larvae include *Triacanthusbrevirostris*, *Scomberomorus commersonianus*, *Chirocentrus dorab* and *Sardinella sp.*

119. Based on the observations, it may be understood that the coastal area of the project region is biologically normal and free from any adverse impact of coastal pollution.

D. Socio Economic Data

120. The purpose of the baseline socioeconomic survey of significantly impacted 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 significantly impacted displaced persons and the survey shall also collect gender-disaggregated data to address gender issues in resettlement. The socio-economic survey shall be 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. The data could only be able to collect from the people cooperated during survey.

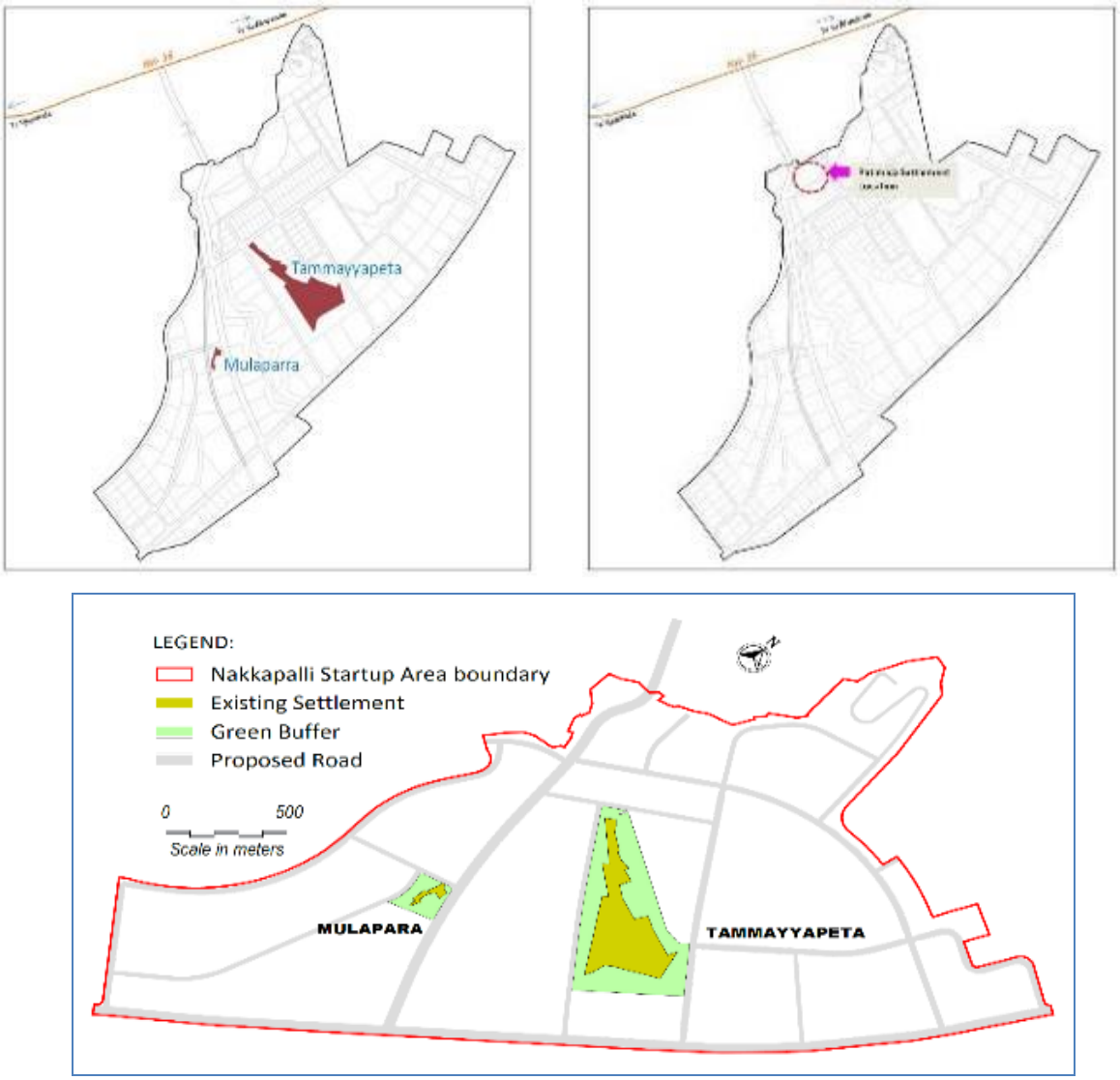
121. Visakhapatnam district is one of the Northeastern Coastal districts of Andhra Pradesh. Visakhapatnam district has 43 Mandals that are organized into 3 Revenue Divisions namely Paderu Revenue Division, Visakhapatnam Revenue Division and Narsipatnam Revenue Division. There are 3,265 villages (193 Un inhabited and 3072 habited), 43 Mandals (4 urban Mandals and 39 Rural Mandals), 3 Revenue Divisions, 15 Towns (1 municipal corporation, 2 municipalities and 12 Census Towns) and 1 Urban Agglomeration, in addition to Greater Visakhapatnam Municipal Corporation area.

122. Visakhapatnam district area is 11,161 km2 with population of 42,90,589 in 10,91,723 households. Visakhapatnam district stands second in terms of urban area with 632.16 km2 and ranks third in terms of urban population with 20,35,922 persons in the state while it stands fourteenth place in terms of rural area, with 10,528.84 km2 and fifteenth position in terms of rural population with 22,54,667 persons in the state. Female population constitutes 50.15% of the district population. The scheduled tribe population is 14.42% and the scheduled caste population is 7.68%. The literacy in the district is 66.91% and the work participation is 44.05% amongst the district population. The subproject area is spread over five villages in Nakkapalli Mandal, namely, (i) Chandanada; (ii) Rajayyapeta; (iii) Butchirajupeta; (iv) Vempadu; and (v) D.L. Puram.

123. **Habitations within the start up area.** Mulapara and Tammayapeta settlements that exist on gramakantams (government land) and Patimida settlement within the start-up area

(measuring 29.93 acres) will be retained to avoid physical displacement. Industrial land use planning has been done in such a way that a green buffer of 50 meters will be left around the boundaries of existing settlements. In addition to this, start-up lay out plan has also ensured that plots for pharmaceutical and chemical industries are located atleast 500 meters away from existing settlements.

Existing Settlements with proposed 50 Metres Buffer in Start-Up Area



1. Demographic Profile of Project Affected Households

124. **Affected persons by Sex**: In the project there are 696 displaced persons of which 52% are males and 48% are females. The sex ratio of the project impacted area is 917 females over 1000 males. Table 7 shows the displaced persons by sex.

Table 7: Affected persons by Sex

Hamlet	House Holds	Male	Female	Total
Vempadu	126	246	224	470
Chandanada	20	59	59	118
Rajayyapeta	10	20	16	36
Buchchirajupeta	19	38	34	72
D.L.Puram	0	0	0	0

Hamlet	House Holds	Male	Female	Total
Total	**175**	**363**	**333**	**696**
		52%	**48%**	

Source: Census and Social Survey

125. **Household by Religion**: Among the project impacted families more than 99% families follow Hindu religion, less than 1% follows Christian religion. Table 8 shows the household status by religion.

Table 8: Households by Religion

Hamlet	House Holds	Hindu	Muslim	Christian	Others	Total
Vempadu	126	126	-	-	-	126
Chandanada	20	20	-		-	20
Rajayyapeta	10	9	-	1	-	10
Buchchirajupeta	19	19	-		-	19
D.L.Puram	0	0	0	0	0	0
Total	**175**	**174**	**-**	**1**	**-**	**175**

Source: Census and Social Survey

126. **Household by Social Group**: Among the project impacted families schedule caste 88% belong to the General caste and other backward classes includes 11%. Table 9 shows the household as per social group.

Table 9: Household by Social Groups

Hamlet	General	Other Backward Caste	Scheduled Caste	Scheduled Tribe	Total
Vempadu	125	1	0	0	126
Chandanada	19	1	0	0	20
Rajayyapeta	0	9	1	0	10
Buchchirajupeta	10	8	1	0	19
D.L.Puram	0	0	0	0	0
Total	**154**	**19**	**2**	**0**	**175**
%	**88%**	**11%**	**1%**		

Source: Census and Social Survey

127. **Household by Size:** Most of the family size of the affected family is of 4 members which is constitutes to be 42%, while 3 members family size is 21%, 2 members family size 17%- and 6-member family size is 12% and family size of 5 members is 11%. 8 and 9 family members are 7% each and 7 and 1 constitutes to be 5% and 4%. There are more nuclear families among the affected families. Table 10 shows the household by family member size.

Table 10: Household by Family Member Size

Hamlet	1	2	3	4	5	6	7	8	9	Total
Vempadu	5	22	27	55	9	5	1	2		126
Chandanada	0		3	3	1	7	1	2	3	20
Rajayyapeta	0	3	2	2	2	1	0	0	0	10
Buchchirajupeta	1	3	1	10	2	2	0	0	0	19
D.L.Puram	0	0	0	0	0	0	0	0	0	0
Total	**7**	**30**	**36**	**74**	**19**	**21**	**9**	**12**	**12**	**175**
%	**4%**	**17%**	**21%**	**42%**	**11%**	**12%**	**5%**	**7%**	**7%**	**100%**

Source: Census and Social Survey

128. **Educational Level Displaced Persons**: Among the affected persons educated persons are 62.9%, uneducated persons are 36.2% of the total affected population. The educated females are 30.6% and educated males are 32.3% of the total educated population. The uneducated females are 16.7% and 19.5% are uneducated males of the total populations. Most of the affected persons are primary level educated which constitutes

to be 18.8% of the total affected population. Post Graduate forms the least 2.6% only. Table 11 shows the educational status of the project affected persons.

Table 11: Educational Status

Educational Level	Vempadu		Chandanada		Rajayyapeta		Buchchirajupeta		Total		%	
	M	F	M	F	M	F	M	F	M	F	M	F
Primary 5th	49	39	11	10	4	4	7	7	71	60	10.2	8.6
Upper Primary (8th)	12	25	6	9	1	1	1	5	20	40	2.9	5.7
High School (10th)	34	39	5	8	5	3	11	5	55	55	7.9	7.9
Higher Secondary (12th)	13	19	1	3	1	2	3	2	18	26	2.6	3.7
Technical Education	27	2	4	1	0	0	1	1	32	4	4.6	0.6
Graduation	13	12	2	4	1	0	4	3	20	19	2.9	2.7
Post-Graduation	8	9	0	0	0	0	1	0	9	9	1.3	1.3
Uneducated	88	75	30	24	8	6	10	11	136	116	19.5	16.7
Unanswered	2	4	0	0	0	0	0	0	2	4	0.3	0.6
Total									**363**	**333**	**696**	

Source: Census and Social Survey

129. **Occupation of Displaced Persons**: Among the affected persons the total workforce is 55% and total non-workforce which includes not in the workforce and unemployed constitutes to be 29% of the total affected population and the unanswered population is only 16%. Most of the affected population is engaged as agriculture labourers which is 47.5% followed by casual workers which is 2%, industrial labourer, business or trade, self-employed is merely 1%. The female work force is 22% and non-work force is % and unanswered is 15% with respect to the total female population. Table 12 shows the occupational level of the affected persons.

Table 12: Occupational Level

S. No	Occupation	Vempadu		Chandanada		Rajayyapeta		Buchchirajupeta		Total		%	
		M	F	M	F	M	F	M	F	M	F	M	F
1	Petty/ tea Shop	0	0	0	0	0	1	0	1	0	2	0	0.3
2	Eatry/ Daba			0	0	0	0	0	0	0	0	0	0
3	Repair/ Spare part	2	0	0	0	0	0	0	0	2	0	0.3	0
4	Business	0	1	0	0		0	2	1	2	2	0.3	0.3
5	Self Employed	1	0	3	1	1	0			5	1	0.74	0.15
6	Salaried Persons	0	0	4	5	0	0	0	0	4	5	0.6	0.74
7	Professional	1	1	0	0	0	0	0	0	1	1	0.15	0.15
8	Industrial Worker	7	0	1	0	0	0	2	0	10	0	1.49	0
9	Casual Worker	3	1	8	3	0	0	0	0	11	4	1.64	0.6
10	Cultivator	0	0	1	0	0	0	0	0	1	0	0.15	0
11	Agriculture Labourer	146	120	20	2	11	4	16	12	193	138	28.72	20.54
12	Unemployed	4	8	0	0	0	5	1	2	5	15	0.74	2.23
13	Not in Workforce	43	53	22	48	3	3	8	5	76	109	11.31	16.22
14	Unanswered	39	40			5	3	8	14	52	57	7.74	8.48
	Total	**24**	**22**	**59**	**59**	**20**	**16**	**37**	**35**	**36**	**33**	**53.8**	**49.7**

S. No	Occupation	Vempadu		Chandanada		Rajayyapeta		Buchchirajupeta		Total		%	
		M	F	M	F	M	F	M	F	M	F	M	F
		6	4							2	4	7	

Source: Census and Social Survey

130. **Income of Household**: Among the affected household most of the people earn in between Rs 15000 to Rs 30000 which constitutes to be 45% which is followed by earn of Rs 0 to Rs 15000 to be 29% and Rs 30000 to Rs 50000 which is 14%. The average yearly income is only Rs 20,304/- only. Table 13 shows the yearly income of the affected families.

Table 13: Income of the Household Yearly

Village/ Income Level	Vempadu	Chandanada	Rajayyapeta	Buchchirajupeta	D.L.Puram	Total	%
>0 to <=15000	46	1	2	2	0	51	29
>15000 to <=30000	59	9	5	5	0	78	45
>30000 to <=50000	15	5	0	4	0	24	14
>50000 to <=80000	0	2	0	3	0	5	3
>80000 to above	0	3	0	2	0	5	3
Unanswered	6	0	3	3	0	12	7
Total	**126**	**20**	**10**	**19**	**0**	**175**	**100**

Source: Census and Social Survey

131. **Loans of the Household**: The loan takers are 72% of the total impacted families while the non-loan takers are 13% only. Unanswered are 15%. Among the loan taken most of the families which are 41% have taken loan from both banks and money lenders. The loan takers from only money lenders constitute to be 18% and only from bank is 13% with respect to the total loan taken families. These loans are mainly for work purpose. Table 14 shows the loan takers and non-loan takers among the affected families.

Table 14: Indebtedness of Households

Village/ Loan Taken	Banking Institution	Money Lender	Both	No loan	Unanswered	Total
Vempadu	15	21	54	9	27	126
Chandanada	6	4	6	4	0	20
Rajayyapeta	0	0	3	7	0	10
Buchchirajupeta	1	7	9	2	0	19
D.L.Puram	0	0	0	0	0	0
Total	**22**	**32**	**72**	**22**	**27**	**175**
%	**13**	**18**	**41**	**13**	**15**	**100**

Source: Census and Social Survey

132. **Impact on Vulnerable Households**: The vulnerability factor of household head by elderly (>=60 years) is high which is 38% which is followed by Women Headed Households is 33% and BPL which is 21%. Table 15 shows the household vulnerable among the affected families.

Table 15: Vulnerable Household

Village / Vulnerable	Vempadu	Chandanada	Rajayyapeta	Buchchirajupeta	D.L.Puram	Total	%
Women Headed Household	7	0	5	2	0	14	33
Schedule Caste	1		1	1	0	3	7
BPL		8	1		0	9	21
HH Headed by Elderly (>_60 Years)	2	12	0	2	0	16	38
Total	**10**	**20**	**7**	**5**	**0**	**42**	**100%**

Source: Census and Social Survey

133. **Assets Owned**: The total assets owned by the affected households are 522. Most of the asset owned by the affected households is mobile phones are 27% which is followed by television 23%, Motorcycle and moped is 20%. Cycle is 17% and Refrigerator is 9% of the total assets among the affected families. Table 16 represents the total assets owned by the affected households.

Table 16: Assets Owned

Village / Assets Owned	Vempadu	Chandanada	Rajayyapeta	Buchchirajupeta	D.L.Puram	Total	%
Television	78	19	4	17	0	118	23
Refrigerator	40	2	2	3	0	47	9
Washing Machine	2				0	2	0.4
Cycle	57	16	1	13	0	87	17
Motorcycle/ Moped	78	14	2	9	0	103	20
Car	4			1	0	5	1
Telephone	2			1	0	3	1
Mobile Phone	98	20	9	16	0	143	27
Cart	3	1		1	0	5	1
Tractor	8			1	0	9	2
Total	**370**	**72**	**18**	**62**	**0**	**522**	**100**

Source: Census and Social Survey

2. Health Seeking Behaviour

134. **Childbirth**: Among the affected families 59% of the deliveries take place in govt. hospitals, 22% in private clinics at both Govt. and Private hospitals 14%. There is awareness among people but still methods like mid wife at home delivery or delivery by village elders is taken place which constitutes to be 4%. Table 17 shows the institutional delivers for childbirth in the impacted village households.

Table 17: Institutional Deliveries

Village/ Information of Health Seeking Behaviours	Vempadu	Chandanada	Rajayyapeta	Buchchirajupeta	Total	%
Govt. Hospital	77	7	5	14	103	59
Pvt. Clinic	31	1	5	2	39	22
Village elder at home	0	7	0	0	7	4
Both Govt. &Pvt. Hospital	16	5	0	3	24	14
Unanswered	2				2	1
Total	**126**	**20**	**10**	**19**	**175**	**100%**

Source: Census and Social Survey

135. **Illness Treatment**: Among the affected families the illness treatment is in the govt. Hospital which is 54%, followed by private clinics 23%, 22% of the people treat in govt. as

well as private hospital. Self-medication is not practiced. Table 18 shows the different ways of treating the illness among the affected families.

Table 18: Treatment of Illness

Village/ Information of Health Seeking Behaviour	Vempadu	Chandanada	Rajayyapeta	Buchchirajupeta	Total	%
Govt. Hospital	71	0	8	15	94	54
Pvt Clinic	38	0	2	1	41	23
Both Govt. & Pvt Hospital	15	20	0	3	38	22
Unanswered	2				2	1
Total	**126**	**20**	**10**	**19**	**175**	**100**

Source: Census and Social Survey

3. Economic Indicators

136. **Type of House**: Among the affected families 45% of the total affected households live in concrete houses, 38% in Tiled houses and 18% in Thatched/wooden/Tin houses. Table 19 shows the construction type of affected families.

Table 19: Type of House Construction

Villages/ Housing	Thatched / Wooden / Tin	Tiled	Concrete	Total
Vempadu	28	40	58	126
Chandanada	0	11	9	20
Rajayyapeta	1	6	3	10
Buchchirajupeta	2	9	8	19
Total	**31**	**66**	**78**	**175**

Source: Census and Social Survey

137. **House possession**: Among the affected families 96% have own houses and 3% have rented houses. Unanswered family constitutes to be 1%. Table 20 shows the house possession among the affected families.

Table 20: House Possession

Villages/ Housing	Owned	Rented	Unanswered	Total
Vempadu	120	4	2	126
Chandanada	20	0	0	20
Rajayyapeta	9	1	0	10
Buchchirajupeta	19	0	0	19
Total	**168**	**5**	**2**	**175**

Source: Census and Social Survey

138. **Separate Kitchen**: The facilities such as separate kitchen among the affected families are with 47% of the families but rather 51% of the families cook in their household area or outside without appropriate kitchen and facilities in it. 2% of the households among the affected households didn't answer. Table 21 shows the number of affected households separate kitchen among the affected families.

Table 21: Separate Kitchen

Villages	Yes	No	Unanswered	Total
Vempadu	52	71	3	126
Chandanada	19	1	0	20
Rajayyapeta	3	7	0	10
Buchchirajupeta	9	10	0	19
Total	**83**	**89**	**3**	**175**

Source: Census and Social Survey

139. **Separate Latrine Facility**: Among the affected families 41% have separate latrine or toilet facility, while 58% don't have a separate latrine or toilet facility. 1% of the households among the affected households didn't answer. Table 22 shows the separate latrine or toilet facility among the affected households.

Table 22: Separate Latrine Facility

Villages	Yes	No	Unanswered	Total
Vempadu	106	18	2	126
Chandanada	20	0	0	20
Rajayyapeta	5	5	0	10
Buchchirajupeta	16	3	0	19
Total	**147**	**26**	**2**	**175**

Source: Census and Social Survey

140. **Separate Bathroom Facility**: Among the affected families 84% has separate bathroom facility and 15% don't have the facility. 1% of the household among the affected households didn't answer. Table 23 shows the separate bath facility among the affected households.

Table 23: Separate Bath Facility

Villages	Yes	No	Unanswered	Total
Vempadu	106	18	2	126
Chandanada	20	0	0	20
Rajayyapeta	5	5	0	10
Buchchirajupeta	16	3	0	19
Total	**147**	**26**	**2**	**175**

Source: Census and Social Survey

141. **House Electrified:** Among the affected families 92% houses are electrified, while 7% houses have no electricity. 1% of the household among the affected households didn't answer. Table 24 shows the household electrified among the affected household.

Table 24: Household Electrified

Villages	Yes	No	Unanswered	Total
Vempadu	117	7	2	126
Chandanada	20	0	0	20
Rajayyapeta	5	5	0	10
Buchchirajupeta	19		0	19
Total	**161**	**12**	**2**	**175**

Source: Census and Social Survey

142. **Water Supply for the Household:** Among the affected families 58% of them use Public Tap/ Hand Pump and 19% use other sources and HSC is 12%. Table 25 shows the water supply among the affected household.

Table 25: Water Supply

Villages	HSC	Public Tap/ Hand Pump	Own Bore/ Open well	Others	Unanswered	Total
Vempadu	1	77	6	32	10	126
Chandanada	20	0	0	0	0	20
Rajayyapeta	0	8	1	1	0	10
Buchchirajupeta	0	16	0	0	3	19
Total	**21**	**101**	**7**	**33**	**13**	**175**

Source: Census and Social Survey

143. **Fuel for Cooking:** Among the affected household 83% have LPG Gas and only 10% cook on firewood. Table 26 shows the fuels used for cooking.

Table 26: Fuel for Cooking

Villages	LPG Gas	Gobar Gas	Firewood	LPG Gas/ Gobar Gas	LPG Gas/ Firewood	Unanswered	Total
Vempadu	103	1	13	1	6	2	126
Chandanada	18	0	0	2	0	0	20
Rajayyapeta	5	0	5	0	0	0	10
Buchchirajupeta	19	0	0	0	0	0	19
Total	**145**	**1**	**18**	**3**	**6**	**2**	**175**

Source: Census and Social Survey

4. Resettlement Preferences

144. **Resettlement Preferences**: Among the project affected families, 90% wants cash compensation. Only 5% desire for Land for Land and 2% are undecided and unanswered. Table 27 shows the references preferences.

Table 27: Resettlement Preferences

Villages	Cash Compensation	Land for Land	Undecided	Both Cash compensation & Land for Land	Unanswered	Total
Vempadu	113	5	3	1	4	126
Chandanada	20	0	0	0	0	20
Rajayyapeta	8	2	0	0	0	10
Buchchirajupeta	17	1	1	0	0	19
Total	**158**	**8**	**4**	**1**	**4**	**175**

Source: Census and Social Survey

5. Gender Aspects

145. **Financial Decision**: Among the affected families 52% only have a say in financial decisions in the family. Table 28 shows the financial decision capacity of women in the family.

Table 28: Financial Decision

Villages	Yes	No	Unanswered	Total
Vempadu	65	52	9	126
Chandanada	6	14	0	20
Rajayyapeta	6	4	0	10
Buchchirajupeta	14	5	0	19
Total	**91**	**75**	**9**	**175**

Source: Census and Social Survey

146. **Water Fetching**: The fetching of water in the affected households is being completed by Lady of the House which constitutes to be 84%. Table 29 represents the water fetching activity among the project affected households.

Table 29: Water Fetching Activity

Villages	Lady of the House	Girl Child	Other Specify	Others	Un-answered	Total
Vempadu	98	7	18	0	3	126
Chandanada	20	0	0	0	0	20
Rajayyapeta	10	0	0	0	0	10
Buchchirajupeta	19	0	0	0	0	19
Total	**147**	**7**	**18**	**0**	**3**	**175**

Source: Census and Social Survey

147. **Skill Development Training**: Among the affected households' women were asked about the skill development training. Out of the total 70% agreed of the training. Table 30 shows the women agreed and disagreed for skill development training.

Table 30: Skill Development for Women

Villages	Yes	No	Unanswered	Total
Vempadu	81	43	2	126
Chandanada	20	0	0	20
Rajayyapeta	5	5	0	10
Buchchirajupeta	16	3	0	19
Total	**122**	**51**	**2**	**175**

Source: Census and Social Survey

148. **Income Generation Activity**: Among the affected households' women who wish to be economic independent are 71% and 27% are not interested in being an earning member of the family. Table 31 shows the income generation activity interest among the affected households.

Table 31: Income Generation Activity

Villages	Yes	No	Unanswered	Total
Vempadu	86	38	2	126
Chandanada	20	0	0	20
Rajayyapeta	4	5	1	10
Buchchirajupeta	15	4	0	19
Total	**125**	**47**	**3**	**175**

Source: Census and Social Survey

6. Fishing Villages and Fish landing Centers near project Coast

149. As per the socio-economic study, it is found out that the proposed subproject is also affecting fishing community and fishing landing centre near to the project site. Due to the various impacts related to the land acquisition, living standards and other income generating activities of the communities (i.e., fishing community, shepherd community and business people) are also affected. Especially, the fishing community will be much affected by the project during the construction period of the subproject. The details of the fishing community and fish landing centre are given in the below Table 32.

Table 32: List of Marine Fishing Villages and Land[12]

Sl. No	Name of the Fishing Villages	Name of fish Landing Centre
1	Boyapadu	Boyapadu
2	Rajayyapeta	Rajayyapeta
3	DonevaniriLaxmipuram	-

Source: Census and Social Survey

7. Demographic Profile of Impacted by Sub-Project (Bulk-water Supply pipeline)

150. **Subproject impacted by Villages**: In subproject, 10 villages are identified which are temporary impacted and are listed below in detailed, there are only 64 households who are responded to the questionnaire out of 168 households are impacted structures. Table 33 shows the detailed list of impacted villages.

Table 33: Impacted Villages due to Sub-Project

Sl. No	Hamlet/Village Name	Mandal Name	No of surveyed Households	%
1	Adda Road	Nakkapalli	5	7.81

[12] Report of Central Marine Fisheries Research Institute, Cochin and http://apfisheries.cgg.gov.in.

Sl. No	Hamlet/Village Name	Mandal Name	No of surveyed Households	%
2	Chinnagummaluru	Kotavuratla	1	1.56
3	Darlapudi	Kotavuratla	2	3.13
4	Jallur	Kotavuratla	9	14.06
5	Kotavuratla	Kotavuratla	21	32.81
6	Nakkapalli	Nakkapalli	9	14.06
7	Peddagummaluru	Kotavuratla	4	6.25
8	Sunkapur	Kotavuratla	1	1.56
9	Thangedu	Kotavuratla	3	4.69
10	Yendapalli	Kotavuratla	9	14.06
	Total		**64**	**100.00**

Source: Primary Social Survey

151. **Temporary Impacts**: Among the 64 impacted households, 25% are kiosk/bunks, 53% are commercials shops, 9.38% are residents, 10.94% are others and 1.56% is Res & Com. the details are given in the Table 34.

Table 34: Temporary Impacts due to Sub-Project

Sl. No	Temporary Impact	No	%
1	Residential - 1	6	9.38
2	Commercial - 2	34	53.13
3	Res & Com - 3	1	1.56
4	Kiosk / Bunk - 4	16	25.00
5	Others - 5	7	10.94
	Total	**64**	**100.00**

Source: Primary Social Survey

152. **Temporary Tenure**: Among the impacted households, 21.88% are owners, 32.81% are encroachers, 26.56% are squatters, 15.63% are tenants and 3.13% are Kiosk / Street Vendor. The details are given in Table 35.

Table 35:Temporary Impacts due to Sub-Project

Sl. No	Temporary Tenure	No	%
1	Owner-1	14	21.88
2	Encroacher-2	21	32.81
3	Squatter-3	17	26.56
4	Tenant-4	10	15.63
5	Kiosk / Street Vendor - 5	2	3.13
	Total	**64**	**100.00**

Source: Primary Social Survey

153. **Duration of stay in Sub-Project area**: Among the impacted households, 53.13% are residing 10 years plus, 23.44% are residing 5 years plus, 14.06% are residing 20 years plus and 9.37% are residing other years. The details are given in Table 36.

Table 36: Duration of stay in Sub-Project area

Sl. No	Duration of Stay	No	%
1	3+ Years	1	1.56
2	4+ Years	3	4.69
3	5+ Years	15	23.44
4	10+ Years	34	53.13
5	15+ Years	1	1.56
6	20+ Years	9	14.06
7	No Answer	1	1.56
	Total	**64**	**100.00**

Source: Primary Social Survey

154. **Type of structure impacted due to Sub-Project area**: Among the impacted households, 29.69% are permanent structures, 31.25% are semi-permanent structures, 31.25% are temporary structures and 7.81% are movable structures. The details are given in Table 37.

Table 37: Type of structure impacted due to Sub-Project area

Sl. No	Type of Structure	No	%
1	Permanent - 1	19	29.69
2	Semi-Permanent - 2	20	31.25
3	Temporary - 3	20	31.25
4	Movable - 4	5	7.81
5	Projection / Extension - 5	0	0.00
	Total	**64**	**100.00**

Source: Primary Social Survey

155. **Portion of structure impacts**: Among the impacted households, 12.50% of the households are impacted fully and 87.50% of the households are impacted partly or partially. The details are given in Table 38**.**

Table 38: Portion of structure impacts

Sl. No	Portion of Structure Impact	No	%
1	Full -1	8	12.50
2	Part - 2	56	87.50
	Total	**64**	**100.00**

Source: Primary Social Survey

156. **Household by Religion**: Among the project impacted families more than 89% families follow Hindu religion, 3.13% follows Christian religion, 3.13% follows Muslim religion and 4.69% are not disclosed. Table 39 shows the household status by religion.

Table 39: Households by Religion

Sl. No	Religion	No	%
1	Hindu – 1	57	89.06
2	Muslim – 2	2	3.13
3	Christian – 3	2	3.13
4	Others – 4 (specify)	3	4.69
	Total	**64**	**100.00**

Source: Primary Social Survey

157. **Monthly Income of Household**: Among the affected household most of the people earn in between Rs.0 to Rs.10,000 which constitutes to be 35.94% which is followed by earn of Rs.11,000 to Rs.20,000 to be 42.19%, Rs.21,000 to Rs.30,000 which is 6.25%; Rs.41,000 to Rs.50,000 which is 7.81%, Rs.50,000 and above which is 3.13% and 4.69% are not answered. The average monthly income is only Rs.17,967/- only. Table 40 shows the yearly income of the affected families.

Table 40: Income of the Household Monthly

Sl. No	Income of Households	No	%
1	0-10K	23	35.94
2	11-20K	27	42.19
3	21-30K	4	6.25
4	31-40K	0	0.00
5	41-50K	5	7.81
6	50+ above	2	3.13
7	No Answer	3	4.69
	Total	**64**	**100.00**

Source: Primary Social Survey

158. **Ration Cards of the impacted Households**: Among the impacted families 85.94% have ration cards and 14.06% of the households don't have ration cards. Table 41 shows the ration cards of the impacted Households.

Table 41: Ration Cards of the impacted Households

Sl. No	Ration Card	No	%
1	Yes	55	85.94
2	No	9	14.06
	Total	**64**	**100.00**

Source: Primary Social Survey

159. **Occupation of impacted households**: Among the impacted households the total workforce is 96.87% and total non-workforce which includes not in the workforce and unemployed constitutes to be 3.13% of the total impacted. Most of the impacted population is engaged as business and trade which is 51.56% followed by petty shops which is 25.00%, eatery, repair shops and self-employed is merely 14.06%. The casual workers are4.69% and non-work force is 3.13% of impacted population. Table 42 shows the occupational level of the affected persons.

Table 42: Occupational Level of impacted Households

Sl. No	Occupation	No	%
1	Petty / Tea shop-1	16	25.00
2	Eatery-2	4	6.25
3	Repair/Spare part-3	4	6.25
4	Business / Trade -4	33	51.56
5	Self-employed – 5	1	1.56
6	Salaried / Pension- 6	0	0.00
7	Professional-7	0	0.00
8	Industrial worker– 8	0	0.00
9	Casual labourer-9	3	4.69
10	Cultivator-10	0	0.00
11	Agricultural labourer-11	1	1.56
12	Livestock / dairy - 12	0	0.00
13	Unemployed-13	0	0.00
14	Not in workforce-14	2	3.13
	Total	**64**	**100.00**

Source: Primary Social Survey

160. **Impacted Vulnerable Households**: The vulnerability factors of the BPL household are 81.25% which is very high and followed by APL7.81% and not answered households are 10.94%. Table 43 shows the vulnerable households among the impacted families.

Table 43: Vulnerable Household of Impacted area

SL. No	Vulnerable Status	No	%
1	BPL	52	81.25
2	APL	5	7.81
3	Not answered	7	10.94
	Total	**64**	**100.00**

Source: Primary Social Survey

161. **Business (commercial) activities among the impacted families**: Among the impacted households the total nature of business in eatery is 3.13%, Tea stall is 6.25%, petty shops are 42.19%, workshops are 4.69%, saloons are 4.69%, retail trading is 20.31% and others are 18.75%. This study shows that the impacted area is having lot of business

activities where the bulk water pipelining is going to be lay downed. Table 44 shows the business (commercial) activities among the impacted families.

Table 44: Business (Commercial) activities

SL. No	Nature of Business	No	%
1	Eatery – 1	2	3.13
2	Tea stall – 2	4	6.25
3	Petty Shop – 3	27	42.19
4	Repair/Workshop – 4	3	4.69
5	Saloon – 5	3	4.69
6	Retail trading - 6	13	20.31
7	Others - 7	12	18.75
	Total	**64**	**100.00**

Source: Primary Social Survey

162. **Affect of path due to subproject**: Among the impactedhouseholds93.75% are stated that they are affected by the subproject, 3.13% are stated that they are not affected by the subproject and 3.13% of the households are not answered. Table 45 shows the details of path affect.

Table 45: Affect of path due to subproject

SL. No	Affect of path due to subproject	No	%
1	Yes	60	93.75
2	No	2	3.13
3	Not Answered	2	3.13
	Total	**64**	**100.00**

Source: Primary Social Survey

163. **Loss of Money**: Among the impactedhouseholds20.31% are impacted their daily wages of Rs.500, 12.50% are impacted their daily wages of Rs.600 and 10.94% are impacted their daily wages of Rs.200, 14.06% are impacted their daily wages of Rs.400. And others 42.19% are provided with detailed explanation in the table. Table 46 shows the details of loss of amount.

Table 46: Loss of amount due to project (shop)

SL. No	Loss of amount due to project (shop)	No	%
1	200	7	10.94
2	250	2	3.13
3	300	9	14.06
4	400	5	7.81
5	500	13	20.31
6	600	8	12.50
7	1000	6	9.38
8	1500	4	6.25
9	2000	2	3.13
10	3000	1	1.56
11	Not-answered	7	10.94
	Total	**64**	**100.00**

Source: Primary Social Survey

164. **Affect of access to the house due to project**: Among the impacted households 37.50% are stated that they are affected to have access to the houses by the subproject, 59.38% are stated that they are not affected to have access to the houses by the subproject and 3.13% of the households are not answered. Table 47 shows the details of affect of access.

Table 47: Affect of access to the house due to project

SL. No	Affect of access	No	%
1	Yes	24	37.50
2	No	38	59.38
3	Not answered	2	3.13
	Total	**64**	**100.00**

Source: Primary Social Survey

165. **Frequency of Hospital Visit by the impacted Households**: Among the impactedhouseholds9.38% are stated that they are frequently visiting the hospital, 87.50% are stated that they are not visiting frequently to the hospital and 3.13% of the households are not answered. Table 48 shows the details of frequency of hospital visit.

Table 48: Frequency of Hospital Visit

SL. No	Frequent visit to Hospital	No	%
1	Yes	6	9.38
2	No	56	87.50
3	Not answered	2	3.13
	Total	**64**	**100.00**

Source: Primary Social Survey

166. **Impacts on School going Children**: Among the impactedhouseholds10.94% are stated that their children are going to schools and are impacted by the project and where are 85.94% of the households reported that no children are going to school and 3.13% of the households are not responded to the questionnaire. Table 49 shows the details Impacts on School going Children.

Table 49: Impacts on School going Children

SL. No	School going Children	No	%
1	Yes	7	10.94
2	No	55	85.94
3	Not answered	2	3.13
	Total	**64**	**100.00**

Source: Primary Social Survey

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

167. 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 stages 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.

168. 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.

169. 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

170. 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.

171. **Land acquisition and involuntary resettlement impacts.** The subproject also entails involuntary resettlement impacts in project affected villages. 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 Plan of this subproject. The following table shows the summary of involuntary resettlement impacts identified for 174.44 acres (70.6 Ha) of land covered by this plan and persons associated with these impacts.

Summary of Subproject Impacts

	Impact	Extent/Number[13]
1	Loss of Land	174.44 acres (70.6 Ha)
1.1	Negotiated Settlement/Direct Purchase of Land	34.72 acres (14.05 Ha)
1.2	Assigned/D-Patta Land	81.94 acres (33.16 Ha)
1.3	Assigned/Government Land (Encroached/Disputed Claims)	57.78 acres (23.38 Ha)
2	Loss of Structure/access disruption (due to Bulk Water Supply Pipeline works)	168 structures#
2.1	Loss of privately owned structures (by non-titleholders/encroachers)	140 structures#
2.2	Loss of Structure- common property resources/public facilities (due to Bulk Water Supply Pipelaying works)	28 structures
3	Loss of Trees	10860 trees##
4	Project Affected Families*	203 families (914 persons)
4.1	Private Land (acquisition proposed through Negotiated Settlement)	40 families

[13] Based on primary survey with households available/willing to provide information during the survey and based on preliminary design. A 100 percent census and inventory of loss survey will be conducted upon design finalization and resettlement plan (this document) will be updated based on survey findings.

	Impact	Extent/Number[13]
		(180 persons)
4.2	Loss of Assigned/D-Patta Land	6 families (27 persons)
4.3	Loss of Assigned/Government Land (Encroached/with Disputed Claims)	17 families (77 persons)
4.4	Families affected by Loss of Structure-Bulk Water Supply (Pipe** Laying works)	140 families (630 persons)
5	Physically Displaced Families	Nil
6	Economic Impacts	139
6.1	Permanent Economic Displacement (Assigned land holders)	23
6.2	Temporary Income Loss (Bulk Water Supply)	116
7	Vulnerability Status***	
7.1	Vulnerable families (to total affected families)	29%
7.1a	Women headed households	13%
7.1b	Scheduled Tribe households	Nil (0%)
7.1c	Scheduled Caste households	4%
7.1d	BPL households-	23%
7.1e	Disabled Headed Households	Nil (0%)

BPL = below poverty line; DHH = disabled-headed household; WHH = women-headed household.
* Number of project affected persons estimated based on average family size as per socio-economic survey conducted among 102 (out of 203) affected families. Vulnerable families may have multiple vulnerabilities. Categories of vulnerability presented above are not mutually exclusive.
** Inventory of loss may change upon design verification and conduct of detailed measurement survey.
***based on socio-economic survey conducted among sample of 102 affected families. Estimate to be confirmed upon conduct of 100 percent census and inventory of loss survey.
structure losses include boundary walls, transformers, steps, ramps and may also involve partial loss of wall of shop or residence, not requiring relocation. The project will make every effort to avoid or minimize structure loss during implementation.
based on survey conducted earlier for the entire start up area (i.e., 1120 acres). Information specific to 174.44 acres will be included in the updated resettlement plan.

Source: Resettlement Plan

172. 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, discharge permit for the treated waste water effluent to be discharged to marine environment, hazardous waste management requirement, and permits for water extraction.

173. 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 site 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 Archeological Department office if a find is suspected and take any action, they require to ensure its removal or protection in situ.

174. 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.

175. Site selection of construction work camps, stockpile areas, storage areas, and disposal areas. Project site is mostly comprising 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 close to the CRZ area.

B. Construction phase impacts and Mitigation Measures

176. Project site comprises of agricultural plantation, crop land, scrub land, aquaculture areas and two settlements - Mulapara and Tammayapeta. APIIC has done Industrial land use planning has been done in such a way that a green buffer of 50 meters will be left around the boundaries of existing settlements, and no pharmaceutical and chemical industries will be located within 500 meters of existing settlements.

177. **Impact due to site development:** In case of development of head works and the summer storage tank, it is likely that the air quality as well as noise levels will alter due to construction activities. Appropriate mitigation measures such as dust suppression; noise attenuation etc. shall be followed. 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.

178. **Impact on Air Quality:** The proposed subproject will require some 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) Use of water suppression and wheel washing;
(iv) Choice of location and facilities for site storage where required (aggregates, sand, soil, cement etc.);
(v) Location of dust generating activities e.g. stone / flag cutting;
(vi) Transport route selection and location
(vii) No burning of waste or wood or logs on site.
(viii) 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;
(ix) Use tarpaulins to cover sand and other loose material when transported by trucks;
(x) Clean wheels and undercarriage of haul trucks prior to leaving construction site;
(xi) 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
(xii) 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;
(xiii) 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
(xiv) Conduct air quality monitoring according to the EMP.

179. **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. The water demand of 6.5MLD will be met from the Yeleru Left Main Canal (YLMC) located north to site at a distance of ~38 km. Visakhapatnam Industry Water Supply Company Limited (VIWSCO) has allotted a total of 39 MLD to Nakkpalli industria area, based on which the irrigation department will allocate water from YLMC. Source of YLMC is a Yeleru reservoir created by an earthen dam across Godavari River. The gross capacity of this reservior is 682 million m3, and provides water for irrigation, domestic and industrial needs. Considering the large quantity of water, and allocation, no adverse impacts envisaged.

180. During the construction phase water will be used for various construction activities. To fulfil the water requirement, water is to be supplied from the nearest surface water bodies 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:

(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.

181. **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.

182. Mitigation Measures
(i) Construction facilities should be located away from settlements (at least 1 km); no facility should be located close to CRZ area (at least 500 m)
(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.

183. **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 needs to be implemented:

(i) 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;
(ii) Contractor to implement TMP effectively
(iii) 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.

184. **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.

185. Borrow Areas: 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 will 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.

186. **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, it is predicted that the impacts on existing flora and fauna will be negligible. Further, 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. Agricultural land that is part of startup 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

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

188. **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:

189. **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.

190. **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.

191. **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 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:

(i) Consult with PMU/ before locating project offices, sheds, and construction plants;
(ii) Minimize removal of vegetation and disallow cutting of trees;
(iii) Provide drinking water, water for other uses, and sanitation facilities for employees;
(iv) Ensure conditions of liveability 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 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.

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:

(i) Strictly follow the protocol for chance finds in any excavation work;
(ii) Stop work immediately to allow further investigation if any finds are suspected; and
(iii) 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 labor 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;

[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.

(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;
(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;
(iii) remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;
(iv) all excavated areas shall be reinstated to the original condition,
(v) 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 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 a 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 after construction 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. Following measures are suggested for implementation/compliance during the operation phase:

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

D. Cumulative, Indirect and Induced Impacts

205. **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.

206. As such, the proposed industrial estate works for the subproject will not generate cumulative impacts of high significance 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.

207. **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..

208. **Beneficial Impacts:** This will help in attracting different sectors of industries due to availability of adequate infrastructure to better manage the industrial wastewater ensuring environmental compliance and increased employment opportunities for people. The influx of industrial sectors such as Aerospace and defence, general purpose machinery, casting and forging, special purpose machinery and pharmaceutical etc. will also help in overall economic development of the state, resulting in attracting skilled workforce and enable improvement of quality of life of people.

209. 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 and also expected to improve development of urban centers with amenities like housing, educational institutions, hospitals, etc.

210. **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 is in the process of obtaining environmental clearance from the MOEFCC. 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.

211. **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.

212. **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.

213. 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.

214. **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 ALTERNATIVES

A. With- and Without-Project Alternatives

215. 'Without-project' or 'do-nothing' Alternative': With increased industrial activity in Visakhapatnam, potential of industrial development in the vicinity has increased. Many employable youths are lack of employment. Without project alternative, it will be difficult to fulfil this requirement.

216. With Project Alternative: Visakhapatnam, one of the key districts coming within the immediate influence of VCIC has all the potential to become an industrial hub. Government of Andhra Pradesh (GoAP) has embarked on major initiative of positioning Visakhapatnam District as the central hub for various sunrise sectors in an endeavor to attract investments from National and International Players across the globe.

217. 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

1.	**Project Need – No Project Alternative**
Type of alternative	'No project' alternative
Description of alternatives	With increased industrial activity in Visakhapatnam, potential of industrial development in the vicinity has increased. Vizag is also hub for a number of technical and other educational institutions from which many employable youths graduate and seek employment. Without project alternative, it will be difficult to fulfil this requirement.
Selected Alternative	Visakhapatnam, one of the key districts coming within the immediate influence of VCIC has all the potential to become an industrial hub. Government of Andhra Pradesh (GoAP) has embarked on major initiative of positioning Visakhapatnam District as the central hub for various sunrise sectors in an endeavour to attract investments from National and International Players across the globe. APIIC has identified land parcel in Visakhapatnam node at Nakkapalli. About 1578 Ha (3899 acres) of land was identified at Butchirajupeta, D.L. Puram, Vempadu, Chandanada, Rajayyapeta villages in Nakkapalli Mandal, of Visakhapatnam District for development of industrial park.
2.	**Site Alternatives and selection criteria**
Type of alternative	The site proposed for the development of Nakkapalli IP has been earmarked based on the major dynamic factors such as the following: • Availability of land • Suitability of land in terms of topographical and geological aspects. • Land shall be free from habitation, forest land, least agricultural activity and • archaeological/historical monuments • No or Minimum Rehabilitation and Resettlement (R&R) • Scope for future development • Suitability for phased and integrated development • Proximity and accessibility to state/National highway/railway line • Sustainability and viability of such a development with minimal environmental impacts • Evaluation in accordance with project objectives and compliance with country laws,

	• policies and legal requirements
Description of alternatives	• Strategically located near to four states Andhra Pradesh, Telangana, Chhattisgarh and Odisha. • The site is located around 60 km from City of Visakhapatnam with well-endowed Social and educational infrastructure. • The site has good access to logistic facilities. The site is well connected to the Road network in the region from Chennai - Kolkata National Highway 16 which is at a distance of ~2.9 km on North of the site. • The nearest Railway station to the project site is at Gullipadu located at 7.2 km towards NW. • Visakhapatnam Airport is located at a distance of 64 km towards NE. The Airport has direct flight connectivity to International destinations such as Kuala Lumpur, Singapore, Colombo, Dubai, National destinations such as Bangalore, Kolkata, Delhi,–, Hyderabad, Mumbai, Port Blair, Jagdalpur, Tirupati, Vijayawada, Ahmedabad, Bhubaneswar, Chennai, & Coimbatore. • Gangavaram Port is located at distance of 60 km NE. • Water and Power supply can be assured for the proposed IP will be met from the Yeleru Left Main Canal (YLMC) in line with the existing industrial water supply policy of the state. • The site meets the requirement of all critical factors that are important for success of development of Industrial Park in the state and could be a pre-eminent location

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Public Consultation and Information Disclosure

218. 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).

219. 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.

220. PAPs 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 APs 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 APs in the project process.

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

222. 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 once the draft EIA/IEE and resettlement plan reports will be updated. The views of different stakeholders will be recorded and documented and indicate how these have been taken into account in project development.

223. The key stakeholders will be consulted during project preparation included:

(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
(x) ADB, Government of Andhra Pradesh and the Government of India.

224. 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.

225. 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.

226. 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. Consultation with Project Affected People

227. The assigned team has conducted stakeholder consultation and recorded project affected family's opinion and public opinion for the betterment of filling the livelihood and better compensation. The team also conducted field survey for the affected villages from 7th September 2018 to 5th October 2018. The minutes of the consultations have been given as **Appendix 2** and **3**. Village consultant and Household Consultant details are given in Table 50 and 51.

Table 50: Village Consultation Details

S. No	Village	Hamlets	Date of Consultation	Project Affected Families
1	Vempadu	Mulapara	September 06, 2018	126
2	Chandanada	Patimeda	September 06, 2018	20
3	Buchchirajupeta	Buchchirajupeta	September 06, 2018	19
4	Rajayyapeta	Boyapadu	September 06, 2018	10
		Total		**175**

Table 51: Household Consultation Details

S. No	Stakeholder Consultation	Date of Consultation	Place of Consultation	No. of Participants	Participants	Consultation Method
1	Vempadu	September 06, 2018	Flood Relief Centre, Vempadu	Men-2 Women-3	Economic Affected-Household Head, Women, old age persons, specially abled. The direct impacted were present, APIIC Officials and Representatives of LNTIEL	Focus Group discussion, Interview method during Census Socio Economic Survey
2	Chandanada	September 06, 2018	Village office, Chandanada	Men-14 Women-3		Focus Group discussion
3	Buchchirajupeta	September 06, 2018	Panchayat office, Butchchirajupet	Men-8 Women-3		Focus Group discussion,

S. No	Stakeholder Consultation	Date of Consultation	Place of Consultation	No. of Participants	Participants	Consultation Method
			a			Interview method during Census Socio Economic Survey
4	Rajayyapeta	September 06, 2018	Flood Relief Centre, Boyapadu	Men- Nil Women-Nil	Some persons expressed that only to conduct door to door survey.	-

Exhibit 1:Stakeholder Consultation

Exhibit 2: Consultation at Vempadu

Exhibit 3: Consultation at Chandanada

Exhibit 4: Consultation at Vempadu

Exhibit 5: Consultation at Buchchirajupeta

C. Outcome of Consultations

228. People are aware of the subproject development and compensation was provided to some people and they are very eager about the employment opportunities. The participants were informed of the measures that will be taken to ensure that environmental impacts such as noise, dust or inconvenience during construction activities will be suitably addressed. The summary of consultations outcome is given in Table 52.

Table 52: Summary of Consultations Outcome

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
September 06, 2018, Vempadu	5	• Some people received compensation, whereas some people have not received the compensation. • Compensation for Trees paid is far less and some people are yet to be paid • Compensation for Bore wells and open wells are not paid • Due to less income from agriculture and scanty rainfall, people agreed to give their lands for industrial development anticipating job opportunities • People are not willing to relocate from the villages • No employment assurance was given to people • No proper high school is available in the villages • Common health problems in the area are malaria and typhoid. People are expecting better health care facility • Industrial pollution may cause health problems	• Compensation is pending with revenue agencies and not released due to legal complications • Compensation paid is as per valuation by horticulture department • Issue was informed to officials; action will be taken as per government rules. • Industries coming up will be advised to employ the local people based on skill set and skill development training programs as a part of Corporate Social Responsibility (CSR) activities shall be conducted • As of now, no resettlement is proposed for the villages. • Industries coming up will be advised to employ the local people based on skill set and skill development training programs as a part of Corporate Social Responsibility (CSR) activities shall be conducted • As a part of Corporate Environment Responsibility (CER) and CSR, development of educational facilities will be taken into priority. • As a part of Corporate Environment Responsibility (CER) and CSR, development of health care facilities will be taken into priority. • Proper mitigations measures will be adopted as a part of Environmental Management Plan.
September 06, 2018, Chandanada	17		
September 06, 2018, Buchchirajupeta	11		
October 03, 2019 Yendapalli to Kagitha Junction Via Adda Road and Nakkapalli	168	• People need better compensation for temporary affected structures • People are ready to give the way for the bulk water pipeline • People asked for not to cut the trees for pipeline sake • Many shops and houses will have disturbance of path/way to cross the road during the execution of work Alternate way for accessing	• A proper mitigation measure is proposed to take the action on issues raised • No trees are disturbed during the execution of work, if necessary, take mitigation measures on it. Above mitigation measures may consider for the same

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
		the houses and shops	

D. Public Consultation

229. Public hearing as a part of the environmental clearance process was conducted on 25 November 2020. Summary of Public hearing details is as provided below. Minutes of Public hearing and consultations are provided as **Appendix 4**. The stakeholder consultations will be continued during the project implementation.

230. A public consultation has been conducted on 25 November 2020 at 11 am. The consultations were held at the project site at Rajsyyapeta, Boyapadu village raad, Nakkapalli, district Visakhapatnam. 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 12.06.2019 was issued to APIIC. APIIC has conducted EIA of the proposed project with corridor of impact within 10 kms of radius.

Table 53: Summary of Public Consultation conducted on 25 November 2020

Date and Venue of Public Consultation	Number of attendees	Issues /concerns raised during the public consultation	The response of the EA/IA on how to address the issues and concerns
Safeguard Public Consultation 25.11.2020 at project site Rajayyapeta	M-98 F-29	• Community suggested that compensation to D-Patta Land should be on par with Jirayath Land (expectation of 32 Lakh per Acre as paid for International Airport) also stated that last payment for land was 18 Lakhs per acre and requested compensation as per R&R GO 2013; • Community requested that Tree Felling must be compensated at INR 4000/- per Tree for Coconut, Cashew and Mango. • He also requested cancellation of coastal corridor project till implementation of R&R Plan as per section 38 of 2013 Land Acquisition act. • He also alleged that there is disparity in compensation for houses at Nooraparra, Patimerra, Thummalapeta, Thambayyapetta, Karrivada, Chandanada villages and also requested to return Tax collected during acquisition of houses. • He opposed relocation of Rajayyapeta village for the establishment of Chemical Industries • He also requested compensation of Trees as per G.O 268 • It was also alleged that compensation is not paid for LA; • Requested to provide details type & no. of Industries and no. of jobs;	• Compensation paid for 685.36 acre patta land and 16.47 of Direct Purchase land total 701.82 acres accordingly land handed over to APIIC • Balance disbursement of compensation is pending due tolegal complications, absentee land lords/ residing outstation from project site • Compensation paid is as per valuation by the horticulture department • The issue was informed to officials; action will be taken as per government rules. • Industries coming up will be advised to employ the
• Mr. M. Venugopal Redy (IAS) Joint Collector cum Additional District Collector Vishakhapatnam • Sri Meena Shubham Shaik Environment Engineer AP Pollution Control Board **<u>Project Authorities</u>** • Sri Nageshwar Rao CGM APIIC-Vishakhapatnam • SusrutaAmirapu Associate Project Consultant M/s L&T Infrastructure Engineering Ltd. Hyderabad			

Date and Venue of Public Consultation	Number of attendees	Issues /concerns raised during the public consultation	The response of the EA/IA on how to address the issues and concerns
		• Compensation for Trees paid is far less and some people are yet to be paid • Villagers suggested that R&R package should be provided compulsorily to them. It should be implemented before APIIC asks them to vacate the village • Compensation for Borewells and open wells are not paid • People are not willing to relocate from the villages. • He requested establishment of Govt. college at Nakkapalli and Govt. Projects in proposed industrial parks • He informed that only INR 1500/- was paid per coconut tree to villagers against INR 5800/- • No employment assurance was given to people • Industrial pollution may cause health problems	local people based on skillset and skill development training • As of now, no resettlement is proposed for the villages. • Proper mitigations measures will be adopted as a part of the Environmental Management Plan. • APIIC will take appropriate measures and decisions in this regard

PUBLIC CONSULTATION MEETING ON 25 NOVEMBER 2020

VIII. GRIEVANCE REDRESS MECHANISM

231. **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.[16] 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.

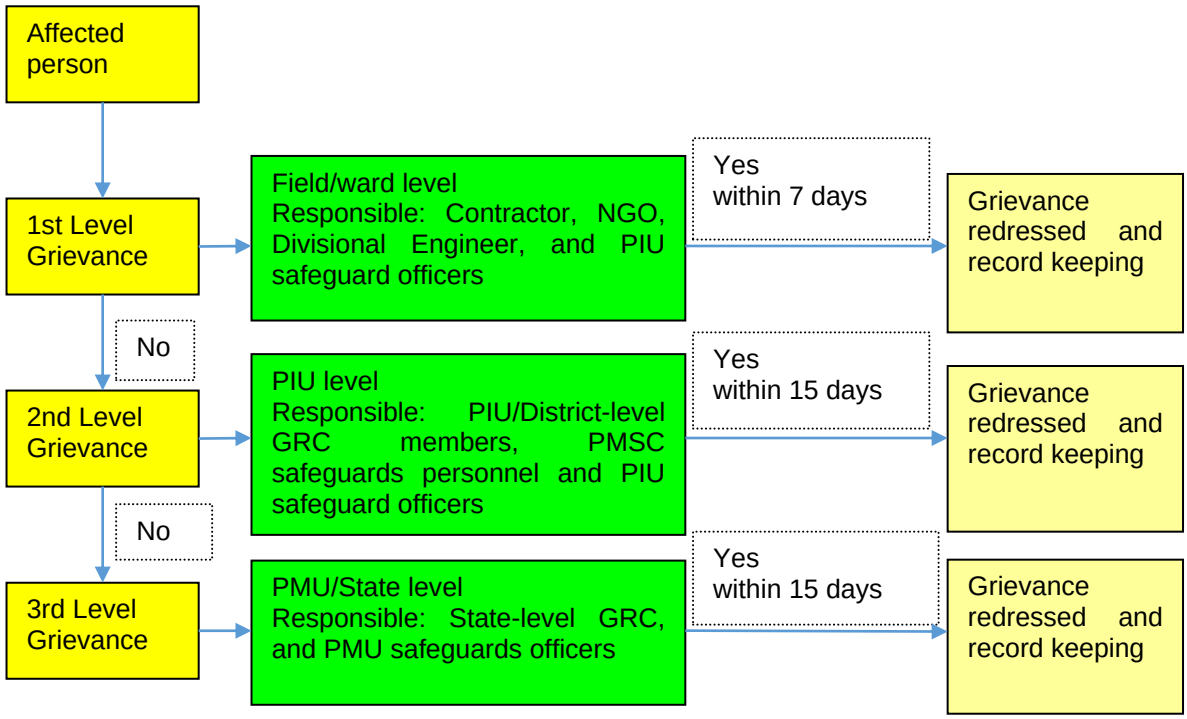
(ii) **2nd level grievance.** All grievances that cannot be redressed within 7 days at field/ward level will be reviewed by the GRC at district level headed by Joint Collector. GRC will attempt to resolve them within 15 days. The PIU safeguard manager (social safeguards and communications/ environment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

232. The multi-tier GRM for the project is outlined below (Figure 19), 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.

[16] 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 19: 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

233. 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.

234. 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.

235. 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.

236. **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.[17]

237. **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.

238. **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.

239. **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.

240. **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

[17] 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.

241. **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.

242. **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).

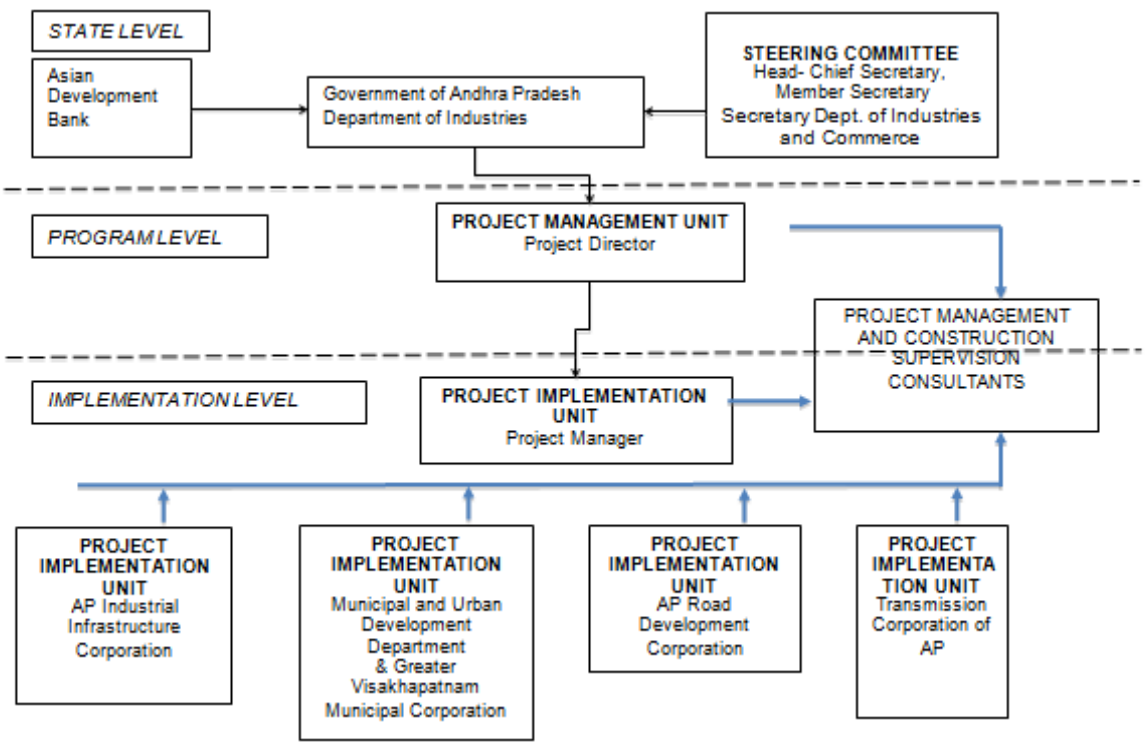
IX. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

243. 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.

244. 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.

245. 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.

Figure 20: APIIC subproject under VCICDP - Implementation Arrangements



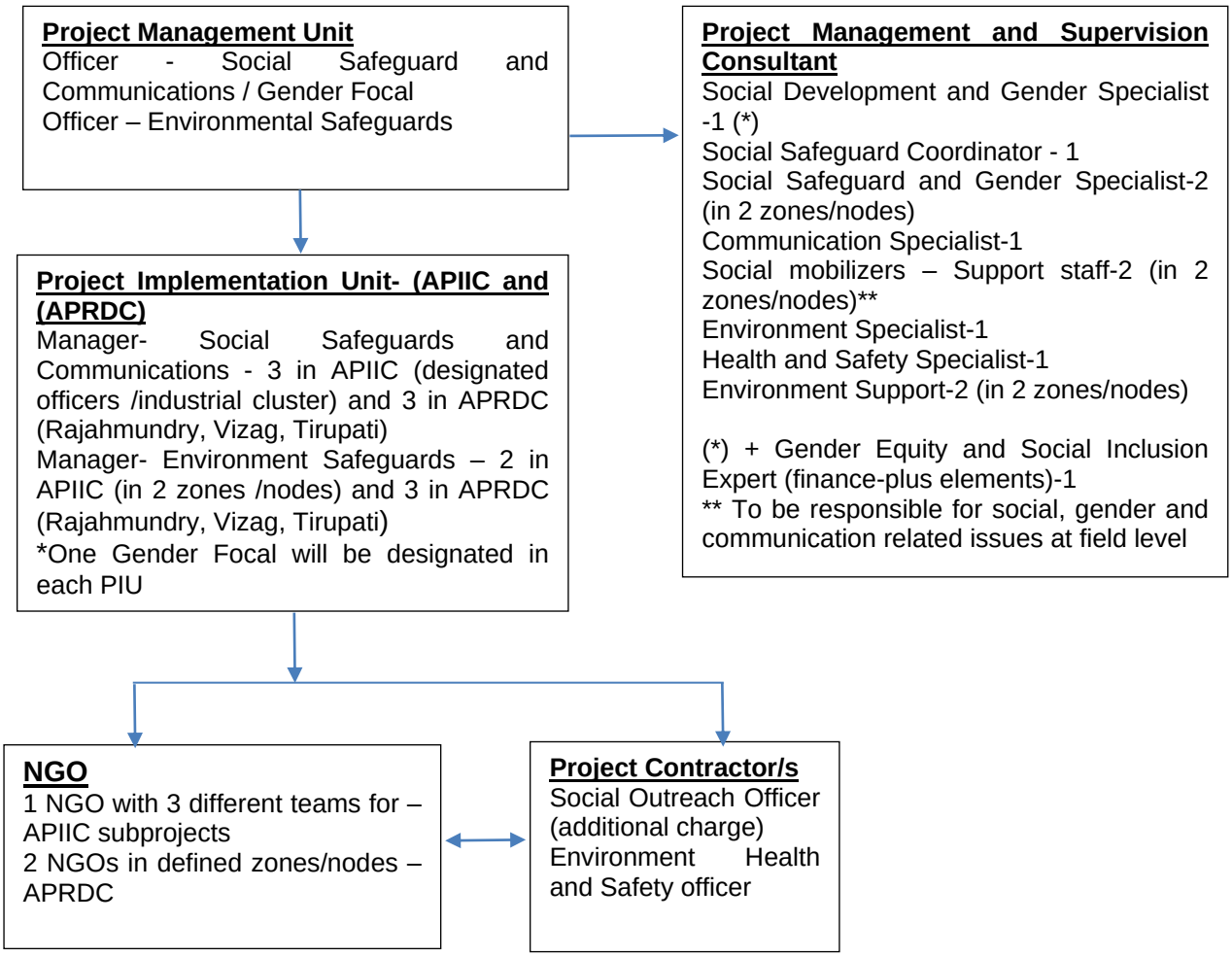
246. The GOAP will ensure that all the requirements prescribed in Schedule 5 of the framework financing agreement, and the following frameworks that have been prepared with respect to the Facility are complied with during the processing and implementation of VCICDP: (i) environmental assessment and review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

247. 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.

248. 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.

249. 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 21.

Figure 21: Safeguards Organogram – Visakhapatnam–Chennai Industrial Corridor Development Program



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

A. Safeguard Implementation Arrangement

250. **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 O 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 based in PMU and supported

by two field-based environmental engineers one in each Nodes[18] 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.

251. **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.

252. **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 APTransco, 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.

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

Table 54: PIU Environmental Safeguard Manager Tasks and Responsibilities

PIU Environmental Safeguard Manager	Tasks and Responsibilities
Environmental Safeguards –APRDC	• include IEEs/EMPs in bidding documents and civil works contracts; • review and approve SEMPs prepared by contractors; • oversee day-to-day implementation of SEMPs by contractors including compliance with all government rules and regulations; • take necessary action for obtaining rights of way; • oversee environmental monitoring by contractors; • Ensure that workers are paid and treated according to the labour legislations and ADB's SPS prohibited list requirements • take corrective actions when necessary; • 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 • organize an induction course for the training of contractors in environmental management to be delivered by PMSC consultants
Senior Engineer Cum Compliance Officer (DE Level) – APTransco	• 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; • 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)	• include IEEs/EMPs in bidding documents and civil works contracts; • review and approve SEMPs prepared by contractors; • oversee day-to-day implementation of SEMPs by contractors including compliance with all government rules and regulations; • take necessary action for obtaining rights of way; • oversee environmental monitoring by contractors; • Ensure that workers are paid and treated according to the labour legislations and ADB's SPS prohibited list requirements • take corrective actions when necessary; • 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 • organize an induction course for the training of contractors in environmental management to be delivered by PMSC consultants.
Deputy Engineer Cum Compliance Officer - GVMC	• (Coordinate with Safeguard Manager and ensure all social/environmental requirements are met.
Environmental Engineer - GVMC	• include IEEs/EMPs in bidding documents and civil works contracts; • review and approve SEMPs prepared by contractors; • oversee day-to-day implementation of SEMPs by contractors including compliance with all government rules and regulations; • take necessary action for obtaining rights of way; • oversee environmental monitoring by contractors; • take corrective actions when necessary; • submit monthly environmental monitoring reports to PMU; • conduct continuous public outreach and awareness building

PIU Environmental Safeguard Manager	Tasks and Responsibilities
	related to environmental management; • address grievances brought about through the GRM in a timely manner; and • organize an induction course for the training of contractors in • environmental management to be delivered by PMSC consultants

253. **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 allowimplementation, 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.

254. **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.

255. 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 55: 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.
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

Table 56: 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 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 STP shall be composted and will be used as manure for greenbelt/ green areas development. Industry ETPs shall have a temporary storage facility for 30 days, wastes shall be periodically disposed to nearby TSDF.	Member industry shall have their independent Hazardous/Non-hazardous waste collection and segregation system. Industries shall have a temporary storage facility for 30 days detention which will be designed as per the requirement. Wastes shall be periodically disposed to nearby TSDF by the member industry. Industries shall 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.	Industry specific critical pollutants shall be monitored at industry level. Specific requirement of monitoring shall be carried out as a part of compliance to CFE/CFO.
6	Stack	Developer need to ensure	Stack monitoring shall be carried out by

S No	Component	Responsibility of APIIC	Responsibility of Member
	monitoring	that all regulator measures are properly incorporated and all institutional arrangements by developer as well as member industries are in place.	member industry.
7	Greenbelt development	Greenbelt development along IP boundary and green areas in common areas and open spaces shall be developed.	Greenbelt and green areas shall be developed in the industry level as per APPCB norms.

X. ENVIRONMENTAL MANAGEMENT ANDMONITORING PLAN

A. Environment Management Plan

256. 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 operation stages 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.

B. Environmental Management Plan

257. The following tables show the potential environmental impacts, proposed mitigation measures and responsible parties.

258. 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.

259. A copy of the EMP must be kept on work sites at all times. This EMP will be included in the bid documents and will be further reviewed and updated during implementation. The EMP will be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

260. 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 EMP; 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.

C. Monitoring and Reporting

261. 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.

262. APIIC / PMSC will submit monthly monitoring and implementation reports to PMU, who will take follow-up actions, if necessary. COI 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.

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

263. ADB will review project performance against the COI, 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

Table 57: Environmental Management Plan (EMP) for the Pre-Construction, Construction and Post Construction Phases

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
Contractor Preparatory Works	(iii) Prior to construction, the contractors / APIIC will hire authorized	Environmental monitoring plan for baseline	All project sites	Contractor	Document 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
	environmental monitoring agency for any baseline monitoring in accordance with the EMP monitoring plan						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 body which will inconvenience the community. (v) For excess spoil disposal, ensure (a) site shall be selected	(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
	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 waterlogging, and water pollution.	(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 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	(i) List of approved quarry sites and sources of materials; (ii) Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.	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
	contractor to obtain a written approval from PIU. Contractor to obtain all necessary permit, including environmental clearance						
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
Construction Phase							
Impact due to site development Activities like clearing of vegetation, waste/debris disposal, and establishment of temporary labour camps may change the	(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	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
topography and appearance of the landscape.	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.						
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	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
	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 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						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	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						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	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 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.	(i) Construction machinery 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	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
	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.						
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	(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	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
subproject being implemented under Project 1 of VCICDP, which in turn sources water from a major reservoir in the state – Kandaleru reservoir.	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						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	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.						
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 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
	traffic movement, schedules, and road safety measures and information 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	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
	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						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	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.						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
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; (v) Avoid stockpiling of excess excavated soils; (vi) Coordinate with for beneficial uses of excess excavated soils or immediately dispose	Site cleanliness and upkeep	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
	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.						
Solid waste	(i) General refuse generated on-site will be 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,	Solid waste generation, storage and dispisal practices	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
	on regular basis to minimize odor, pest and litter impacts. (iii) Burning of refuse on construction sites will be prohibited.						
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 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	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
	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, water pollution from storage and use of fuels, oils, solvents, and lubricants Unsanitary and poor living conditions for workers	(i) Consult with APIIC/ before locating project offices, sheds, and construction plants; (ii) Minimize removal of vegetation and disallow cutting of 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	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
	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 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	Chance find protocol	All work sites	Contractor	Document veritifation, site visits and consultations	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
	protection in situ.						
Occupational Health and Safety	(i) Comply with all national, state and local labor laws; (ii) Following best practice health and safety guidelines such as IFC's General EHS Guidelines (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 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	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
	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						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	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; (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;						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	(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.						
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.	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
	The preparation of the 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 Medical facilities including first aid will be	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
	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 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	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
	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 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	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
	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						

Impacts	Mitigation Measures	Parameters to be Monitored	Location	Responsible for mitigation	Monitoring Method	Responsible for Monitoring	Frequency of Monitoring
	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						

E. Environment Monitoring Program

264. 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.

F. Performance Indicators

265. 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.

266. 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.

267. The environmental monitoring programme proposed to be followed by APIIC has been formulated in this Section.

Table 58: Environmental Monitoring Plan

Environmental Attributes	Parameters to be monitored	Frequency of Monitoring and locations	Standards Methods for Sampling & Analysis	Compliance	Implementation	Supervision
Construction Phase						
Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO	Once in a month during entire construction period Locations: (i) 2 settlement in the start up area (ii) boundary around excavation / / ongoing construction areas	Fine Particulate Samplers for PM_{10}, $PM_{2.5}$, Respirable Dust Sampler for SO_2 and NO_X, CO analyser /portable CO meter for CO, and analysis as per CPCB suggested methods.	National Ambient Air Quality Standards released during November 2009 given as **Appendix 6**	Contractor/APIIC through approved monitoring agency	APIIC
Noise Levels	Day and night noise levels	Once in a month during entire construction period Locations: (i) 2 settlement in the start up area (ii) boundary around excavation / / ongoing construction areas	Portable hand-held integrated noise level meter.	National Ambient Noise Standards given as **Appendix 7**	Contractor/APIIC through approved monitoring agency	APIIC
Water Quality	Physical, Chemical and Biological	Once in a quarter during entire construction period 3 locations: 2 surface water bodies and sea water	Grab sampling and analysis by using standard methods.	IS10500, 2012drinking water standards for Groundwater is given **Appendix 8** and Designated Best Use Classification of Inland Surface Water of National Rivers Conservation Directorate, MoEF&CC for Surface Water is given as **Appendix 9**	Contractor/APIIC through approved monitoring agency	APIIC
Soil	Soil texture, type, electrical conductivity, pH, infiltration, porosity, etc.,	Once in a year during construction 2 locations: agricultural land and barren land period	Collection and analysis of samples as per IS 2720	Baseline data, Soil standards by Indian Council of Agricultural Research, New Delhi is given as **Appendix 10**	Contractor/APIIC through approved monitoring agency	APIIC

Environmental Attributes	Parameters to be monitored	Frequency of Monitoring and locations	Standards Methods for Sampling & Analysis	Compliance	Implementation	Supervision
Operation Phase						
Treated Water Quality	Physical, Chemical and Biological	Once in a quarter of the year	Grab sampling and analysis by using standard methods.	IS10500, 2012drinking water standards for Groundwater is given as **Appendix 8** and Designated Best Use Classification of Inland Surface Water of National Rivers Conservation Directorate, MoEF&CC for Surface Water is given as **Appendix 9**	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 priot to reuse/ disposal of dried sludge Location WTP sludge	Standard sampling and testing method	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

G. EMP Implementation Cost

268. Environmental monitoring during construction will also be straightforward and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by PMU-ESS assisted by the PMU environmental safeguard officer. Therefore, no separate budget is required from PMU-ESS.

269. The cost of mitigation measures and surveys during construction will be incorporated into the contractor's costs, which will be binding on him for implementation. The contractors will conduct the surveys.

270. Most of the mitigation measures require the contractors 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.

271. The cost for green belt and Green area development has been included in the BOQ and estimated at INR 10 Million.

Table 59: 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	15.6	Monitoring Amount Part of BOQ Contractor/APIIC to monitor compliance during construction period.
2	Occupational Health and Safety	Implementation of site-specific occupational health and safety plan during construction.		Included as a part of contractor's cost of implementation.
3	Environmental Training			Included as a part of contractor's cost of implementation.
Total Cost			**15.6**	

H. Institutional Capacity Development Program

272. 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 Nakkapalli 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 60: 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 COI, APIIC, and PMSC
Participants	Executing and implementing agencies, COI, and COI staff (technical and environmental) involved in the project implementation	COI/PMU APIIC Contractors	COI APIIC Contractors

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

I. Generic Guidelines for Implementing EMP

273. 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 13: 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
(v) Appendix 18: Sample Environmental Site Inspection Report
(vi) Appendix 19: Construction Site Checklist for EMP Monitoring
(vii) Appendix 20: Sample Grievance Registration Form

XI. CONCLUSION AND RECOMMENDATION

274. The proposed subproject at Nakkapalli has been categorized as Category 'B'. This is based on the fact that the project site does not contain or near or located in any environmental sensitive areas such as wildlife sanctuary, national park, protected area, wetland and mangrove. It is also not located in or near densely populated area and heavy with developmental activities. The Checklist for Rapid Environmental Assessment (REA)is filled and given as **Appendix 13**.

275. Planning principles and design considerations have been reviewed and incorporated into the site planning process whenever possible; thus, environmental impacts as being due to the project design or location were not significant. However, the social impacts due to land acquisition are unavoidable. A resettlement plan has been developed in accordance with ADB SPS 2009 and Government of India laws and regulations

276. Subproject is not located in any environmentally sensitive areas. It does not cover any reserve forest area and no diversion of forest land is required. Majority of Land acquisition has already been conducted by APIIC.

277. 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.

278. As per GoI requirements, the proposed subproject at Nakkapalli 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. EIA is submitted to MOEFCC and EC is expected to be obtained by March 2023.

279. 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.

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.

282. The EMP will assist the COI 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.

283. 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 environmental clearance is in process and likely to be obtained from MOEFCC by March 2023. 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.

284. 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. APIIC will also obtain water allocation from Irrigation Department for drawing water from Yeleru Canal.

285. 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.

286. 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: Water Allocation by VIWSCO

VIWSCO

Visakhapatnam Industrial Water Supply Company Limited

CERTIFIED COPY OF THE MINIUTES OF AGENDA ITEM NO.79/14/6 OF THE 79TH MEETING OF THE BOARD OF DIRECTORS OF VISAKHAPATNAM INDUSTRIAL WATER SUPPLY COMPANY LIMITED HELD ON TUESDAY, 8TH AUGUST, 2017 AT 11.30 AM IN THE CHAMBERS OF THE COMMISSIONER, GVMC, TENNETI BHAVAN, ASEELMETTA JN, VISAKHAPATNAM – 530002

AGENDA ITEM NO.79/14/6 — ALLOCATION OF 39 MLD OF WATER TO APIIC FOR THEIR PROPOSED MULTI MODEL INDUSTRIAL PARK AT NAKKAPALLI (V), VISAKHAPATNAM

The Board was informed that ZM (SEZ), APIIC, Visakhapatnam vide letter dated 26.05.2017 requested the Company to allocate 39 MLD of water for their proposed Multi Model Industrial Park at Nakkapalli (V), Visakhapatnam.

2. Shri V. Nageswara Rao, ZM (SEZ), APIIC, Visakhapatnam who is also Director of the Company informed the Board about the proposed industrial park at Nakkapalli and requested to allocate 39 MLD of water from YLMC maintained by VIWSCO.

3. The members of the Board enquired the VIWSCO Engineers about the feasibility of allocating 39 MLD of water to APIIC. The concerned Engineers replied that water as requested can be allocated.

4. After discussions, the Board

a) Accorded approval to allocate 39 MLD of water to the proposed Multi Model Industrial Park at Nakkapalli, Visakhapatnam from YLMC maintained by VIWSCO.

b) Authorized CMD or any Director severally to communicate the decision of the Board to APIIC.

c) Authorized CMD to take necessary action as may be required in this regard including according necessary approvals from time to time.

//CERTIFIED TRUE COPY//

C. Suman
Chief Financial Officer

Appendix 2: Minutes of Public Consultation Conducted by Pollution Control Board and Signatures of Attendees

ANDHRA PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VISAKHAPATNAM
D.No. 39-33-20/4/1, Madhavadhara Vuda Colony, Visakhapatnam - 530018,
Phone: 0891 -2755356

Lr. No.PH-36/PCB/RO-VSP/2021- 2524 **Date:30.01.2021**

To
The Zonal Manager,
M/s.Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited,
(A Government of Andhra Pradesh Undertaking),
Special Projects Zone,
One Stop Service Center,
Atchuthapuram,
Visakhapatnam District-531011.

Sir,

Sub :- APPCB – RO, Visakhapatnam – M/s.Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited - Establishment of "Industrial Park" by M/s.APIIC at Butchirajupeta(V), Donivani Lakshmi Puram(V), Vemapadu(V), Chandanada(V) & Rajayyapeta(V), Nakkapalli(M), Visakhapatnam District with an investment of Rs.1191 Crores - Environmental Public Consultation scheduled on 25.11.2020 at 11.00 AM – Minutes – Communicated – Reg.

Ref :- Environmental Public Consultation held on 25.11.2020.

***

With reference to the above, a copy of the minutes of the Environmental Public consultation held on 25.11.2020 for the Establishment of "Industrial Park" by M/s.APIIC at Butchirajupeta(V), Donivani Lakshmi Puram(V), Vemapadu(V), Chandanada(V) & Rajayyapeta(V), Nakkapalli(M), Visakhapatnam District with an investment of Rs.1191 Crores is herewith forwarded for information.

Please acknowledge the receipt of the same.

Yours faithfully,

Environmental Engineer

Encl :
1. Copy of the Minutes of EPC.
2. Copy of Attendance of EPC.
3. CD of EPC Proceedings.
4. Copies of the Representations received from the Public/NGOs (19 Nos).

Minutes of the Environmental Public Consultation held on 25.11.2020 at 11.00A.M, at Project site, Rajayyapeta (V), adjacent to Rajayyapeta – Boyapadu Village road, Nakkapalli (M), Visakhapatnam Dist., on the proposed Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Industrial Park in an extent of 1577.87 Ha in Villages of Butcirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M), Visakhapatnam District.

Panel Members presented

Sri. M. Venugopal Reddy, IAS Joint Collector & Addl. District Magistrate, Visakhapatnam District.	Chairman
Sri. Meera Subhan Shaik, Environmental Engineer (FAC), A.P. Pollution Control Board, Regional Office, Visakhapatnam	Member

PROJECT AUTHORITIES :

1. Sri Nageswar Rao,	Chief General Manager, APIIC Atchutapuram, Visakhapatnam
2. Susruta Amirapu,	Associate Project Consultant, M/s. L&T Infrastructure Engineering Limited, Hyderabad. Environment Consultancy of the project.

The list of officers and public present at the meeting is appended as Annexure.

At the outset, the Environmental Engineer(FAC), Regional Office, Visakhapatnam, Andhra Pradesh Pollution Control Board, welcomed the gathering attended to the Public Consultation and informed that as per the Environment Impact Assessment

Notification,2006 issued by MoEF&CC, the proposed APIIC industrial park comes under schedule category A – 7(c) and as per the Terms of Reference (TOR) dated 12.06.2019 issued to APIIC by MoEF&CC for the proposed project, the APIIC has carried out Environmental Impact assessment study during April to June 2018 within 10 Km radius of the proposed site. As per the procedure laid down by the Ministry of Environment, Forests & Climate Change, Government of India vide Notification S.O. No. 1533, Dt. 14.09.2006, the Public Consultation is being conducted for the APIIC Industrial Park proposed in an extent of 1577.87 Ha (3899 Acres) area covered in villages of Butchirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M), Visakhapatnam District with an estimated project cost of Rs. 1191.0 Cr. He informed that Public Consultation is being conducted under the chairmanship of the Joint Collector & Addl. District Magistrate and assisted by A.P. Pollution Control Board officials. A.P. Pollution Control Board has issued a Paper Notification of the Public Consultation inviting concerns of the local affected people and the people having a plausible stake regarding the proposed project. The Notification published in the newspapers of "The Times of India" (English) and "Sakshi" (Telugu) on 24.10.2020 and the executive summaries and the EIA report were displayed at the O/o the Collector & District Magistrate, Visakhapatnam, O/o the District Revenue Officer, Visakhapatnam, Revenue Divisional Officer, Visakhapatnam, O/o the Chief Executive Officer, Zilla Parishad, Visakhapatnam, O/o the General Manager, District Industries Centre, Visakhapatnam, O/o the Revenue Divisional Officer, Narsipatnam, Visakhapatnam District, O/o the Tahasildar, Nakkapalli (V & M), Visakhapatnam District, O/o the Panchayat Secretaries of the villages Butchirajupeta, Rajayyapeta, Donivani Lakshmi Puram, Vempadu & Chandanada of Nakkapalli Mandal, Visakhapatnam District as mentioned in the Public Consultation notification. He requested the public attended to the public consultation can express their views, suggestions & objections if any in the public consultation meeting or representations can also submit to A.P. Pollution Control Board, Regional Office, Visakhapatnam and the entire public consultation meeting recorded and the Audio & Video of the Public Consultation proceedings submitted to the Ministry of Environment, Forests & Climate changes for further examination. He requested the Chairman of Public Consultation to preside over the Public Consultation to conduct further proceedings.

The Joint Collector & Addl. District Magistrate, Chairman of the Public Consultation while welcoming Public attended to the public consultation and informed that for development of industrial areas, the government identifies new places to establish new industries and due to establishment of industries there may be impact on the surrounding environment and pollution control measures implemented as per the directions & suggestions prescribed by the MoEF&CC and other Environmental studies also taken-up from time to time to take preventive measures. He informed that the proposed project requires Environmental Clearance from Ministry of Environment & Climate Change; hence the Public Consultation is being conducted. He informed that the public can express their opinions, suggestions & objections if any or written representation and without any editing video & audio of the entire public consultation proceedings submitted to the Ministry of Environment, Forests & Climate changes for further examination. He requested to start the proceedings.

The Environmental Engineer(FAC) then requested the Zonal Manager, APIIC, Visakhapatnam to inform the details of project.

Sri Nageswar Rao, Chief General Manager, APIIC Atchutapuram, Visakhapatnam as the project proponent while explaining the details of the proposed project informed that land acquisition for the proposed Industrial Park at Nakkapalli is in process and the proposed Industrial Park is a part of Visakhapatnam – Chennai industrial corridor which is a joint venture of Govt. of India &State Government. He said that the proposed Industrial Park is a Multi-Product Project with different types of industries, proposed in an extent of 3899 Acres in the villages of Butcirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli Mandal. He informed that greenbelt proposed in an extent of 610 Acres and there would be about 30,000 direct employment and about 60,000 indirect employment during construction and after commissioning of the Industrial Park. He stated that about 1.0 Lakh Crore investments expected due to development of the Industrial Park. He requested the representative of M/s. L&T Infra Engineering Environmental consultant to explain the project details.

Susruta Amirapu, Associate Project Consultant, M/s. L&T Infrastructure Engineering Limited, Hyderabad informed that the Visakhapatnam–Chennai Industrial Corridor (VCIC) is the India's first coastal corridor proposed to be developed

in an extent of 3899 Acres in the villages of Butchirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M). She said that as per the TOR issued to APIIC by MoEF&CC on 12.06.2019, Environmental Impact Assessment Study was carried out during April to June 2018 within 10 Km radius of the proposed site. She informed that the proposed Industrial Park is located within 60 Km from Visakhapatnam towards South-West Direction and the National High-way is at a distance of 16.30 Km, Gullipadu Railway station is at a distance of 7.20 Km, Gangavaram Port is at a distance of 60 Km and Visakhapatnam Air Port is at a distance of 64 Km from the proposed Industrial Park. She informed that industrial park cater the needs of the industrial establishments viz., Pharmaceuticals, Chemicals and Petrochemicals, Industrial and Consumer Electronics, Auto and Auto components; Aerospace and Defense, Light and heavy Engineering, CRZ permissible hazardous material storages, Building Materials, Industry/Non Metallic minerals, MSME, Food and Agro Processing Industry. The proposed 3899 Acres of the Industrial Park will be developed viz., Industrial Area - 32%, Logistics & Truck Terminal - 2%, Supporting Facilities - 0.9%, Residential/Social Infrastructure – 7.0% and Greenbelt Area - 15.0 5%. She stated that the Zoning criteria is designed viz., up to 50 mts around the habitation green belt developed, 50 to 250 mts is allotted to Orange & Green category industries, Red category industries established from 250 to 500 mts and after 500 mts Bulk drug & Chemical industries established and the required electricity met from AP TRANSCO & DG Sets. She said that during construction phase, 300 MVA electricity met from AP TRANSCO and the water requirement during construction phase 0.5 MLD and 16.15 MLD during operation phase and water withdrawn from Yeleru left main canal. She informed that a Common Effluent Treatment Plant is proposed and the treated water disposed into Sea through marine outfall after obtaining CRZ & MoEF&CC Clearance and no untreated water disposed into the village ponds or creeks and a common STP proposed, the treated water utilized for green belt development. The generated domestic waste disposed to Municipal Solid Waste Treatment facility; the Hazardous waste disposed to TSDF; 61 Acres are allocated for TSDF establishment; Green belt developed in 615 Acres; the Member Industries develop 33% greenbelt within the premises of individual industries. She stated that to develop all required infrastructure facilities the estimated investment would be Rs.1191 Cr. and about 12,000 people would be employed during construction phase and direct employment opportunities for 30,000 people and indirect employment/livelihood for 72,000 people due to the

establishment of industries in the proposed Industrial Park. She informed that the member industries established follow the CSR Acts/Rules and spend their CSR funds for development of Education, Medical, Employment, Sanitation & Social activities. As per the EIA study it was recorded viz., buildings - 47%, agriculture lands - 8%, Water tanks - 6.5%, Habitation - 3%, Open lands 12% and informed that Environmental Monitoring conducted in 6 places to assess the air, sound & soil quality and carried out ground water &surface water quality monitoring at 2 places, and as per the analysis the values were recorded within the standards stipulated by Central Pollution Control Board. She informed that no animals & birds, endangered species were found except Peacocks etc. and the Sea waters are also tested and found that no pollution. She said that 48 villages are existing within 10 km radius with 1,46,000 population out of which 41% people are dependent on cultivation and other communal livelihood activates and 50% are literates; Out of total 3899 acres APIIC has acquired 2850 Acres; 2000 Acres are Patta Lands and 1897 Acres Govt., land; Resettlement & Re-habitation activities taken care. She stated that the dust pollution generated during construction phase mitigated by sprinkling of water, PUC authorized vehicles only utilized during construction activities; PPE kits provided to the workers; no open disposal of wastes generated during development period; OSHO standards & safety precautions adopted. She said that the Member industries also implement air & water pollution control measures and the Ambient Air Quality Monitoring conducted and air quality within the stipulated annual average standards and no untreated water disposed into the village ponds or creeks and the treated water disposed into Sea through marine outfall after obtaining CRZ clearance from MoEF&CC. She informed that transport Management plan, Flood water management plan, Storm-water management plan implemented and Environment Management wing is proposed in environment management plan for which Rs.260 Cr estimated to incur during pre-construction phase and Rs.13.9 Cr after construction phase. She said that disaster Management Plan is followed,Onsite & Offsite emergency plans followed, there would be about 30,800 direct employment and about 72,000 indirect employment opportunities during and after development of the Industrial Park; about 1.0 Lakhs Crores investments are expected after development of the Industrial Park; the project would add the GDP to State & Central Government.

The Environmental Engineer(FAC) has informed that they have received 4 No. of written representations received from Sri K. Lokanadham, CPM, Sri M. Appala Raju, CPI

Party, Sri. Karri Appa Rao & Sri Ch. Narasingarao, AITUC after publishing public consultation Notification in Daily Newspapers on 24.10.2020 and the representations will be submitted to MoEF&CC along with proceedings of the meeting.

The Environmental Engineer(FAC) requested the public to express their opinion, views and suggestions.

Sri T. Kameswara Rao, R/o Rajayyapeta informed that the villagers already facing health problems due to operating of the existing industries in surrounding area, hence he requested to cancel the public consultation. He stated that living is important rather than livelihood & earnings. He further informed that before establishment of the industries the project proponents will give assurance for providing all the pollution control systems to control air & water pollution problems to be generated from their industries, but they fail to implement pollution control systems once the industry commences the operations. Hence, the villagers are against the establishment of new industries which are causing pollution problems. He also requested the committee to inform about the type of industries which are to be established in the industrial park before public consultation so that the public will express their views, suggestions. He also stated that it is not correct time to conduct public consultation during COVID pandemic situation. He requested the authorities to clarify the type of jobs i.e., how many are direct and indirect jobs as they have mentioned 72,000 jobs will be generated due to establishment of the park and requested the committee to allow the establishment of the project only after taking no objection from villagers. He opposed the proposed project of the industrial park as the local villagers will loose their lively hood as most of the people are belongs to fishermen community.

Sri Lokanadham, CPM Party asked the committee to cancel the present Public Consultation as the villagers already suffering with health problems due to the existing Hetero bulk drug industry. He asked the proponent without paying compensation for acquisition of 3899 acres of land how public consultation will be conducted. He opined that EIA report is having full of mistakes while furnishing the information about the jobs to be created during construction phase. He requested to provide to local educated youth as per the Government Order i.e., 75% of employment opportunities should be provided to local educated youth only and the compensation should equally to be paid

according to R & R 2016, G.O but not as per 2003, GO. He said that acquisition of 40 acres of D-form patta land in Chandanada village for the proposed project is illegal. He stated that COVID-19 guidelines are not followed properly and tortoise & fish death occurring due to the existing Divis Laboratories & Deccan Chemical industries. He expressed that earlier public consultations conducted for establishment of the particular projects, but now public consultation conducting for 3899 acres without furnishing the type of projects to be established in industrial park. He also expressed that due to laying of 6 lane road the habitation of Nakkapalli will be disappeared in future. He said that L & T consultants taken 14 villages into consideration in 10 km radius instead of 44 villages during preparation of EIA report. He informed that Yeleru canal is meant for cultivation of agriculture purpose and to cater the needs of drinking water of Visakhapatnam and asked how the Yeleru canal water diverted for proposed project. He expressed that the proposed project is not a green field project, hence he opposed project and requested to cancel the public consultation.

Sri M. Appala Raju, District Member CPM Party said that Public Consultation Notification was issued 30 days before in English & Telugu papers and the EIA report was not displayed in the Panchayat Offices. He said that without proper information, how public express their grievances and how the public consultation is being conducted? He stated that without understanding the apprehensions of surrounding villagers, how the authorities are conducting the public consultation and informed that establishment of bulk drug, chemical and petroleum product industries near to habitation should be withdrawn. As per the EIA report, 2.0 Crore litres of water is required and the withdrawal of water from Yeleru canal is not possible, hence there may be chances of withdrawal of the water from bore wells leads to depletion of the groundwater. As per Environmental Experts survey, Visakhapatnam is classified under Red Zone and not to allow single polluting industry in Visakhapatnam District, then how highly polluting Pharma industries will be proposed in Visakhapatnam District. He stated that with regard to job opportunities, the existing industries in Visakhapatnam district are not providing jobs to the local people. He expressed that conducting the public consultation at a time for entire 3899acres of land which belongs to 11 villages and 5 panchayats is not correct and also expressed that details of type and no. of industries proposed, no. of job opportunities to be arised due to proposed project not mentioned clearly in the EIA report. He informed that during 2010 a notification issued

regarding land acquisition, but no proper compensation distributed to the villagers, then the villagers approached the Hon'ble High Court. He stated that in 2016, the Government tried for land acquisition by paying Rs.18 Lakhs per acre and some of the farmers have given their lands and compensation should be paid to D-patta lands on par with the Jirayath lands. He informed that acquisition of land for establishment of international airport 32 lakhs compensation paid per acre in Vijayawada and why the same compensation is not paid in Nakkapalli area for D-patta lands and cultivated lands on par with the Jirayath lands. He said that compensation to be paid as per 2013 R & R G.O and expressed that regarding compensation to Trees, a G.O. 268 released in 2016 and accordingly compensation of Rs.4000/- per tree to be paid to Coconut, Cashew & Mango trees. He said that there is disparity in payment of compensation to the houses in Nooraparra, Patimerra, Thummalapeta, Thambayyapeta, Karrivada, Chandanada villages and requested to return tax which is collected from the villagers during acquisition of houses. He finally requested to cancel the proposed project and not to establish coastal corridor project till implementation of R&R plan as per section 38, 2013 land Acquisition act.

Sri M. Rambabu, R/o Rajayyapeta has opposed the proposed project and also informed that the Visakha – Chennai Corridor was proposed in the year 2007. He informed that APIIC acquired 3899 acres and APIIC visited the villages for land acquisition and informed to the villagers that project would be established after conducting public consultation in each village. He opposed public consultation and said that chemical industries in and around Rajayyapeta village releasing untreated effluents into sea through pipeline. He said that there are about 18 fishermen villages in the surrounding area, whereas due to the establishment of polluted industries the fish catch reduces. On behalf of fishermen he requested to pay 20 lakhs to 25 lakhs for 18 years old citizens and shall provide R&R cards to each family. He requested as per the Government Order, 75% of employment opportunities to be provided to local villagers. He said that the local educated youth should be provided with proper employment, government should provide boats, a super specialty hospital, residential hostel to be provided for fishermen, cold storages to be provided and mini jetty to be established in Nakkapalli. He said that not to relocate Rajayyapeta village for establishment of chemical industries. He requested to pay compensation for trees as per G.O. 268 and to

cancel public consultation and not to acquire land till implementation of demands of fisherman.

Sri Ch. Narasinga Rao, Convenor, BC &SC Vyathirekha Porata Samiti has opposed the proposed project informed that the Public Consultation to be cancelled as TOM-TOM not conducted in surrounding villages, Public Consultation Notification not circulated in the villages. He stated that 47% people are literate in the surrounding villages, the villagers not aware about the public consultation. He said that land details declared in EIA Report prepared by L&T and the report uploaded in the website are different. He said that in EIA report only Rambilli & Nakkapali Mandals mentioned without mentioning the names of the villages and not disclosed the details of the industries proposed to be established in the Industrial Park. He asked to inform at least one industry name proposed to be established in industrial park and said that earlier PCPR, GO issued in 2013 for acquisition of one lakh acre in 7 Mandals in Visakhapatnam district & 3 Mandals in East Godavari district was cancelled as the public against the GO. He said that American company proposed to establish petro corridor project/petroleum industries with an investment of 11000 crores few years back was also not established. He raised doubt that which industry provides 30,000 direct/indirect employment opportunities and said that at present no fish in upputeru. He informed that 20 ft height wall was constructed which is obstruction for air flow to Gangavaram village. He stated that Hetero drugs not giving jobs for villagers. He requested to establish government college in Nakkapalli and Government projects in proposed Industrial Park. He said that the industries not providing jobs as per GO issued by Government and requested to implement GO. He informed that Sri. Matam Govind not received compensation for his 3.0 acres of agriculture land and informed that compensation of Rs.1500/- instead of Rs.5,800/- was paid to the villagers for one coconut tree.

Sri Rokalla Govind, Chandnada Village has opposed the proposed project and he said that they have protested the PCPIR Corridor by filing a case in Hon'ble High court. He said that public consultation notification not displayed in villages & not conducted TOM-TOM in villages. He informed that without informing about the type & number of industries proposed to be established in the Industrial Park conducting the Public Consultation is not correct.

Sri G. Simhadri, National Fisherman Association, R/o D.L. Puram has opposed the proposed project and he informed that not given TOM-TOM and not creating awareness about the public consultation in the surrounding villages. He said that farmers will get compensation for their agriculture lands, but how fishermen get compensation as the fishermen are depending on fish catching. He said that fish catch was reduced due to pollution of existing industries and the fishermen are migrated to other places for lively hood. He requested to give compensation properly to the villagers and also requested to construct super specialty hospital and residential hostel for fishermen. He informed that Fishermen are not against the industries but against the establishment of chemical & polluting industries. He requested the authorities to implement the Government G.O for providing 75% of the total jobs of the proposed project to local educated youth.

Sri Tota Appa Rao, R/o Upamaka, Nakkapalli said that the villagers are not against the industries but villagers are against the establishment of chemical & polluting industries. He said that proper compensation to be paid to the surrounding villagers and preference will be given to the local villagers during recruitment. He requested to establish super specialty hospital and Degree College in Nakkapalli.

Sri S. Govind, R/o. Amalapuram said that the Government has not paid adequate compensation and also not fulfilled earlier commitments to the villagers. He informed that most of the villagers/farmers are not received the compensation so far.

Sri Adida Satyanarayana, R/o. D.L. Puram has opposed the proposed project and informed that the villagers in Payakaraopeta and Nakkapalli are illiterates and there is no proper communication about the Public Consultation. He requested to pay proper compensation, package and job opportunities to the villagers/famers in Chandanada & DL Puram.

Sri G. Nayana Babu, President, AP State Farmers Association has opposed the proposed project and he requested to cancel the Public Consultation. He informed that proper compensation to be paid to the villagers/fishermen & Taddy workers. He requested not to establish Chemical and polluting industries and shall provide 75% jobs to the local educated youth.

Sri M. Satyanarayana, District President, AP State Farmers Association has opposed the proposed project and he informed that the milk vendors and farmers in the

surrounding villager will be lost their livelihood due to land acquisition for the proposed project. He informed that the local people will be suffered ill health problems due to establishment of chemical & polluting industries and the fish catching will be reduced. He requested to stop the establishment of Industrial Park.

Sri Ch. Sivaji, A.P. Matsyakarakarmika Sangam has opposed the proposed project and informed that the fishermen will lost their livelihood due to establishment of coastal corridor. He informed that most of the women from the fishing community depending on selling of fish and asked the Government to pay compensation to them as the fish catch will be reduced due to the discharge of industrial effluents into the Sea. He requested not to establish chemical industries in the industrial park.

Sri G. Venkata Ramana, R/o D.L. Puram has opposed the proposed project and he informed that the Government has not paid total compensation which is declared by the Government to villagers & famers and only paid part of the amount so far. He also informed that the Tom-Tom was conducted about the public consultation in the surrounding villagers in one day before, so the information is not communicated to the all local villagers. He requested the authorities to ensure that no chemical industries will be established in the industrial park as there are already facing lot of pollution problems due to operation of existing chemical industries and they are not having no objection if establish the food industries and non polluting industries.

Sri Rajana Dora Babu, CPI Party has opposed the proposed project and informed that the consultant prepared false details in the project report and the fishermen will be lost their livelihood due to release of industrial effluents into the Sea. He finally requested the authorities to cancel the public consultation.

Sri Mosa Appala Raju, President, Central Fishermen Society has opposed the proposed project and informed that the villagers are facing pollution problems due to the existing industries. He said that fishermen are not against the industrial development. He opined that proposed industrial park to be established in the non-agricultural lands instead of agriculture lands and the proposed Industrial park to be established only after payment of compensation to the villagers. He also requested to provide job opportunities to the local fishermen.

Sri Avatharam Raju, R/o DL Puram opined that due to establishment of chemical industries, health issues will be arises and the fish catch also reduce. He informed that earlier the fish is available within 2 Km from the shore but now fishermen are going to more than 20 Km for catching fish. He appealed to establish the industries in non-agriculture lands and not to spoil the agriculture lands. He further opined that due to establishment of the industrial park the villagers are not getting any financial benefit and only industrial managements will be benefited.

Sri G. Govind R/o Boyapadu said that APIIC acquired land from villagers of Chandanada, Boyapadu, Buchayyapeta, DL puram in Nakkapalli Mandal and asked the authorities whether the Boyapadu village will be rehabilitated or not, if rehabilitates where it will be relocated.

Sri T. Kodanda Rao, R/o. Rajayyapeta has opposed the proposed project and informed that the fishermen will be the main looser due to establishment of chemical factories as the fish catch will be reduced due to discharge of the industrial effluents into sea. He informed that the surroundings villagers are having about 620 to 650 fishing boats of Rajayyapeta, Chinateernala, Pedateernala, Dondavaka, D.L. Puram and Bangarayyapeta of Nakkapalli Mandal. He requested to pay proper compensation to the fishermen. He said that the authorities should declare the type of industries & no. of industries are to be established in the industrial corridor. He finally said that not to establish bulk drug type of industries in this area.

Sri R. Srinivasa Rao, R/o. Amalapuram said that compensation amount is deposited as one time settlement to the farmers and they are not aware how much compensation t be paid for houses, lands and coconut trees.

Sri G. Narasinga Rao, R/o. Amalapuram said that compensation amount to be settled properly as early as possible.

Sri Appa Rao, BJP said that if public supports or oppose the proposed Industrial park, the project will be implemented by the authorities and he requested to pay compensation to the fisherman properly.

Sri K. Venkatesh, Nakkapalli has opposed the proposed project and informed that without declaring category & no. of industries in the industrial park and without paying

of compensation, conducting of public consultation is not correct. He said that public is not aware about whether APIIC establishing non-polluting industries or polluting industries and also the villagers are not getting communication in time regarding the pubic consultation. He said that villagers are against the establishment of chemical industries but not for industrial development and jobs to be provided for local educated youth and also establishment of skill development centers. He requested to cancel the public consultation.

Smt V. Anitha Ex. MLA has said that conducting public consultation during the COVID-19 is not correct. She expressed that public are not aware the public consultation Notification. She said that the compensation to the farmers/villagers not paid so far and she opined that skill development center to be established as most of villagers are working as labour in the existing industries due to not having proper skills. She said that villagers are facing air pollution problems in surrounding area due to bulk drug industries and said that compensation to be paid as per the R & R, G.O 2013. She said that untreated effluents are discharging into sea by existing industries which causes marine pollution, thereby fish catch is reduced. She expressed that lot of disparities in payment of compensation. She requested to conduct the public consultation after completion of the re-survey of land.

Sri G. Babu Rao, Hon'ble MLA has addressed the public that the requests of the villagers/farmers/fishermen to be taken into consideration and he informed that during the year 2016-2018, Government has acquired 3899 acres of land and the proceedings of entire public consultation will be examined by the Government. He said that he brought the issues related to the payment of compensation for coconut trees to the notice of the Government. He informed that the Government has already proposed to establish Degree College in Nakkapalli village and convert the CHC in Nakkapalli into 50 bedded hospital. He requested the public to extend co-operation in development of the area.

Sri Nagesh has opposed the proposed project and informed that the main looser are the fishermen due to decrease of fish catch and requested proper compensation to be paid to the fishermen. He informed that the villagers are not having objection for establishment of non-polluting industries.

Sri K. Venkata Ramana, Upamaka has opposed the proposed project and informed without informing the name and type of industries proposed to be established, conducting public consultation is not correct. Hence public consultation should be cancelled and rescheduled after payment of compensation. He said that public consultation to be conducted industry wise.

Smt P. Chinnamma, R/o Patimara, Vempadu said that her lands will not be handed over until to receive the total compensation and she has informed that she is not against the establishment of the industries.

Sri Ravi Nooka Raju, R/o Amalapuram and Sri Ravi Apparao, R/o Amalapuram has informed that they are not received the compensation amount so far to their lands.

The Joint Collector & Addl. District Magistrate and the Chairman of the Public Consultation while concluding the Public Consultation, he has informed that the speakers have expressed their opinion freely, some of them have also mentioned that they were not paid proper compensation and disparity in payment of compensation for trees, lands and houses, etc. In this regard one Special Deputy Collector was already appointed to each village to resolve the compensation issues, if any. He has further informed that the proceedings of the public consultation in the form of Audio & visual recording along with the written minutes of the Public Consultation would be forwarded to the Competent Authority for taking necessary action on the proposed Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Industrial Park in an extent of 1577.87 Ha in Villages of Butcirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M), Visakhapatnam District. Finally thanked everybody for participating in the public hearing.

Environmental Engineer(FAC)
A.P. Pollution Control Board,
Regional Office, Visakhapatnam

Joint Collector (RB&R),
Visakhapatnam District
Nominee of the District Collector,
Visakhapatnam District

పర్యావరణ ప్రజాభిప్రాయ సేకరణ సదస్సు

పారిశ్రామిక పార్కు స్థాపన కొరకు.

బుచ్చిరాజుపేట, డి.ఎల్.పురం, వెంపాడు, బండారు

రాజయ్యపేట, గ్రామాల ~~[illegible]~~ ప్రజలనుండి

సంతకాల సేకరణ. సమావేశానికి హాజరైన వారు

సంతకాలు చేశారు

తేది. 25/11/2020

Babu Rao G. MLA. payakaraopeta

Sri M. Venugopal Reddy, Joint Collector. [signature] 25/11/2020

1. R. Kalavathi పాతపాలెం
2. R. సత్యవతి పాలెం
3. M లక్ష్మి [illegible]
4.

M. Subhash
EE (FAC)
APIIC. [signature] 25/11/20

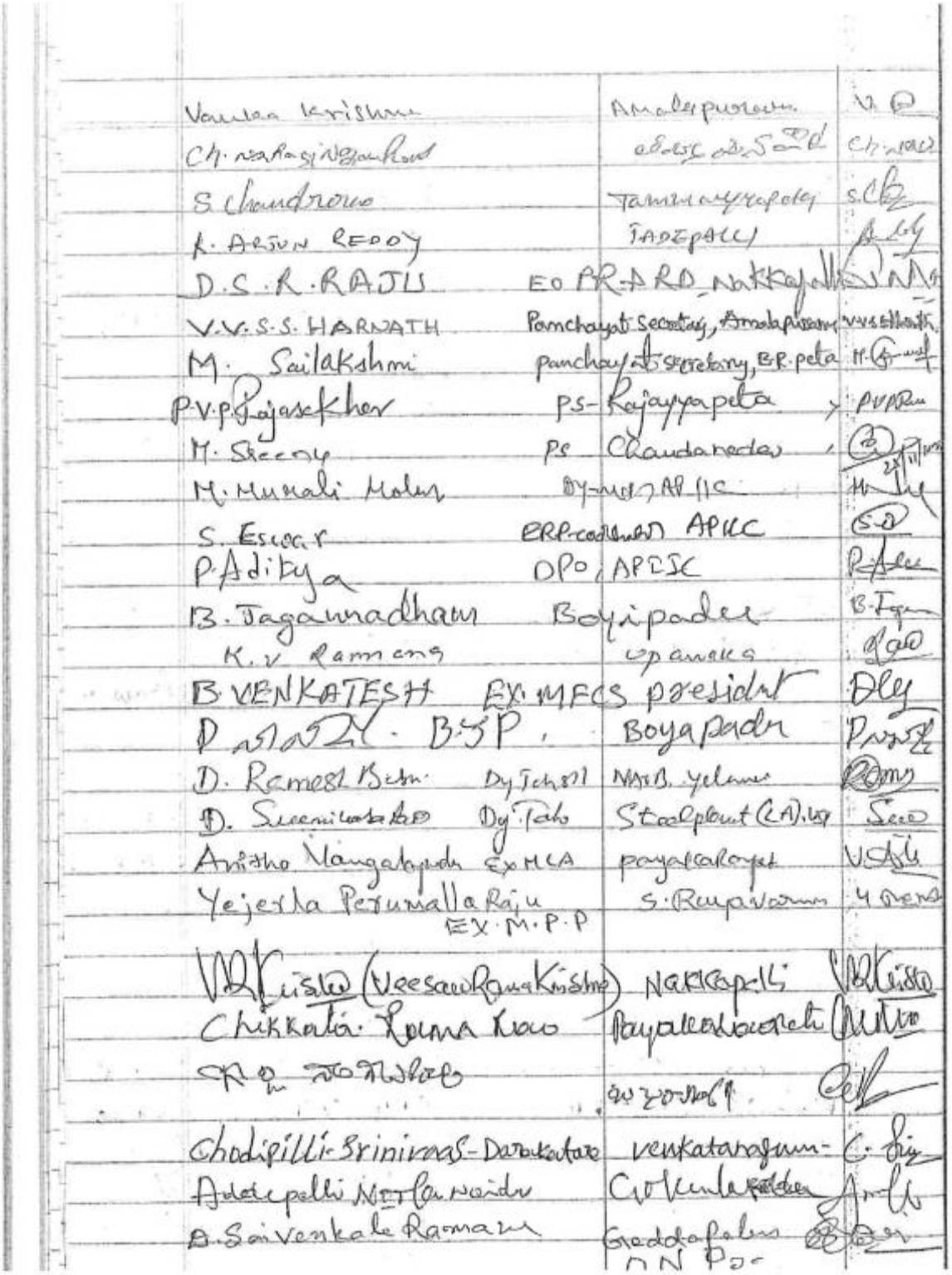
B నాగమణి

M. జ్యోతి [illegible]

పేరు ఊరు

1 [illegible] A. TAJM	D.L [illegible] D.L.puram
P. Prahlad	Rjp
P. KOTI	[illegible]
P. Kalarde	RajayyaPETA
G. Raju	Raja yy PETA
D. Raju	Rajayy PETA
P. KOTI	[illegible]
P. venkat	S. Narsipuram
P. Chandrasekhar	Satyavaram
S. Rate	[illegible]
K. Venkatesh	Bangarammapet
P. Kodandalah	Rajayyapeta
K. Rajesh	Boyapadu
G. Varalakshmi	Boyapadu
Ch. Sujatha	Boyapadu
V. Lana Raju	Bayapadu
P. Adi Raju	Boyapadu
G. Yesurathnam	Boyapadu
K. Lakshmi	Boyapadu
K. Appala Raju	Boyapadu
[illegible]	[illegible]
S. [illegible]	[illegible]
P. C[illegible]	[illegible]
K [illegible] Rao	Rajpet
S. Ramu	Raulu
K. Lovaraju	R.Payya.Peta

[illegible]	[illegible]	[illegible]
P. Yallata Krishna	Boyapalem	[illegible]
R. Varahalu	[illegible]	R.V.D
D. Nani babu	Ganta Palli	D.N
Y. [illegible]	Rajayyapeta	
Y. Arnde Raju	Ande [illegible]	Y.A
K. [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
B. [illegible]	[illegible]	R. [illegible]
K. Ramcharan	[illegible]	
K. Pawan	[illegible]	
M. Nani babu	[illegible]	[illegible]
T. Bhagya [illegible]	[illegible]	[illegible]
Surekanti Govindu	[illegible]	9100821287. S Govinda
T. Appalarao	[illegible]	T. Appala [illegible]
V. Raju	Boyapadu	9676915201
P. [illegible]	[illegible]	9014389798
S. Lala Raju	Malapadu	
Babu Rao	"	
[illegible]	Visakhapatnam	[illegible]
K. LOKANADHAM	CPM VSP	[illegible]
M. [illegible]	CPM - NKP	[illegible]
V. [illegible]	JSP([illegible])	[illegible]



పర్యావరణ ప్రజాభిప్రాయ సేకరణ సదస్సు

పారిశ్రామిక పార్కు స్థాపన కొరకు

బుచ్చిరాజుపేట, డి.ఎల్.పురం, వేంపాడు, బండారు

రాజయ్యపేట, గ్రామాల ~~[illegible]~~ ప్రజలనుండి

సంతకాల సేకరణ. [illegible]

సంతకాలు [illegible]

తేది. 25/11/2020

Babu Rao G. MLA. payakaraopeta

Sri M. Venugopal Reddy, Joint Collector. [signature] 25/11/2020

1 R. Kalavathi [illegible]
2 R [illegible] [illegible]
3 M [illegible] [illegible]
4

M. Subhash [illegible]
EE (FAC)
APIIC.
[signature] 25/11/20

[illegible]

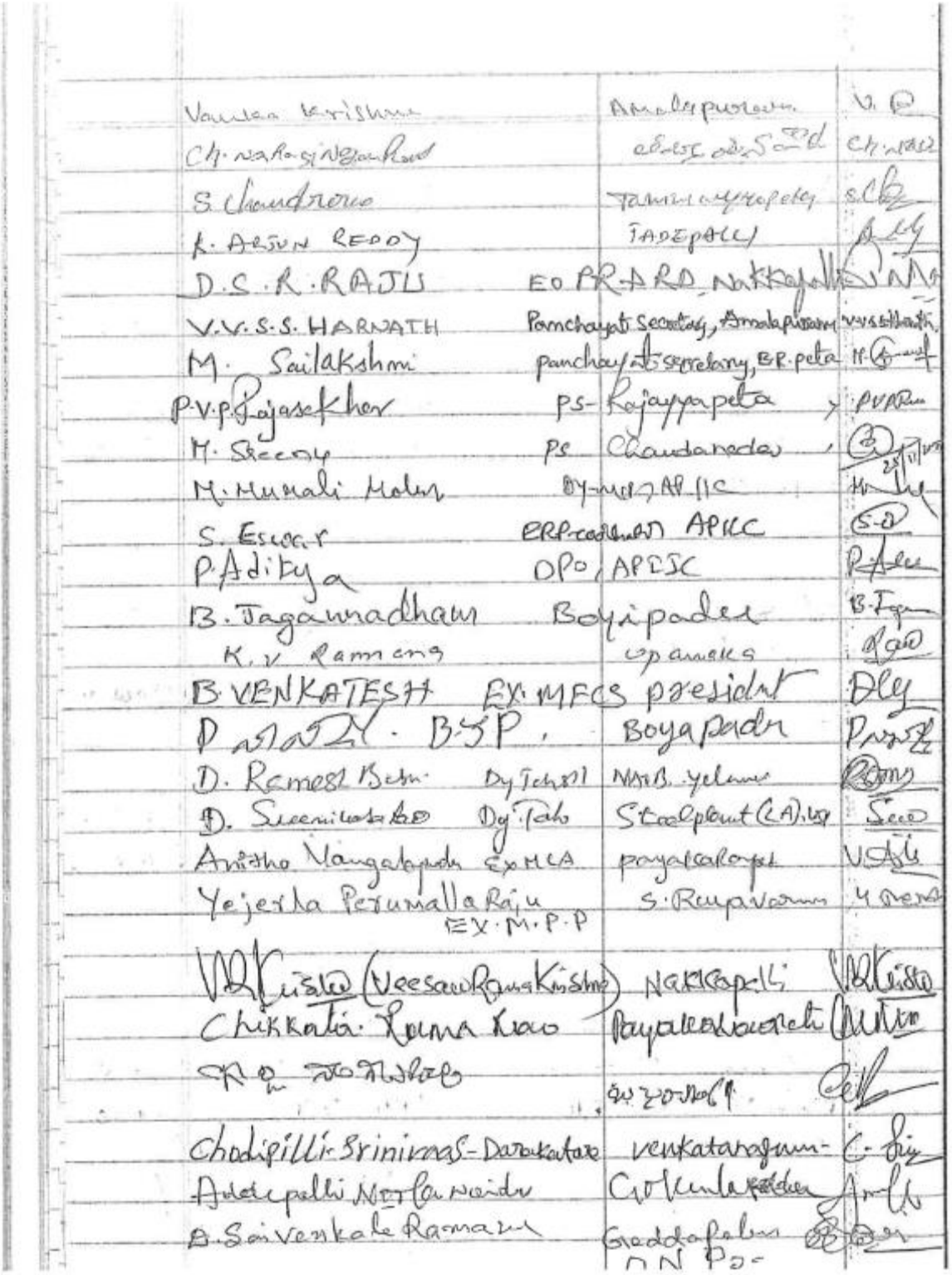
M. [illegible] [illegible]

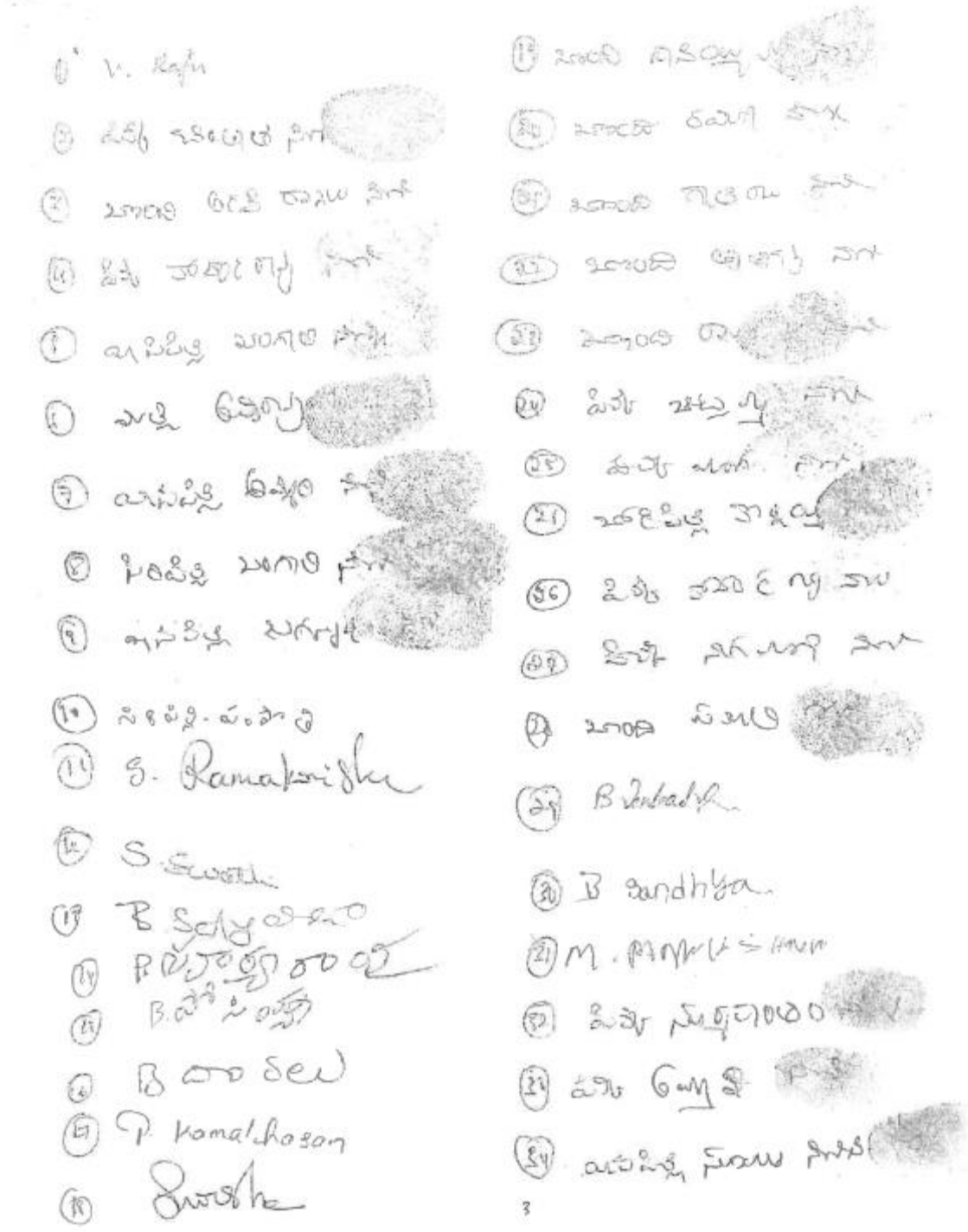
[illegible]

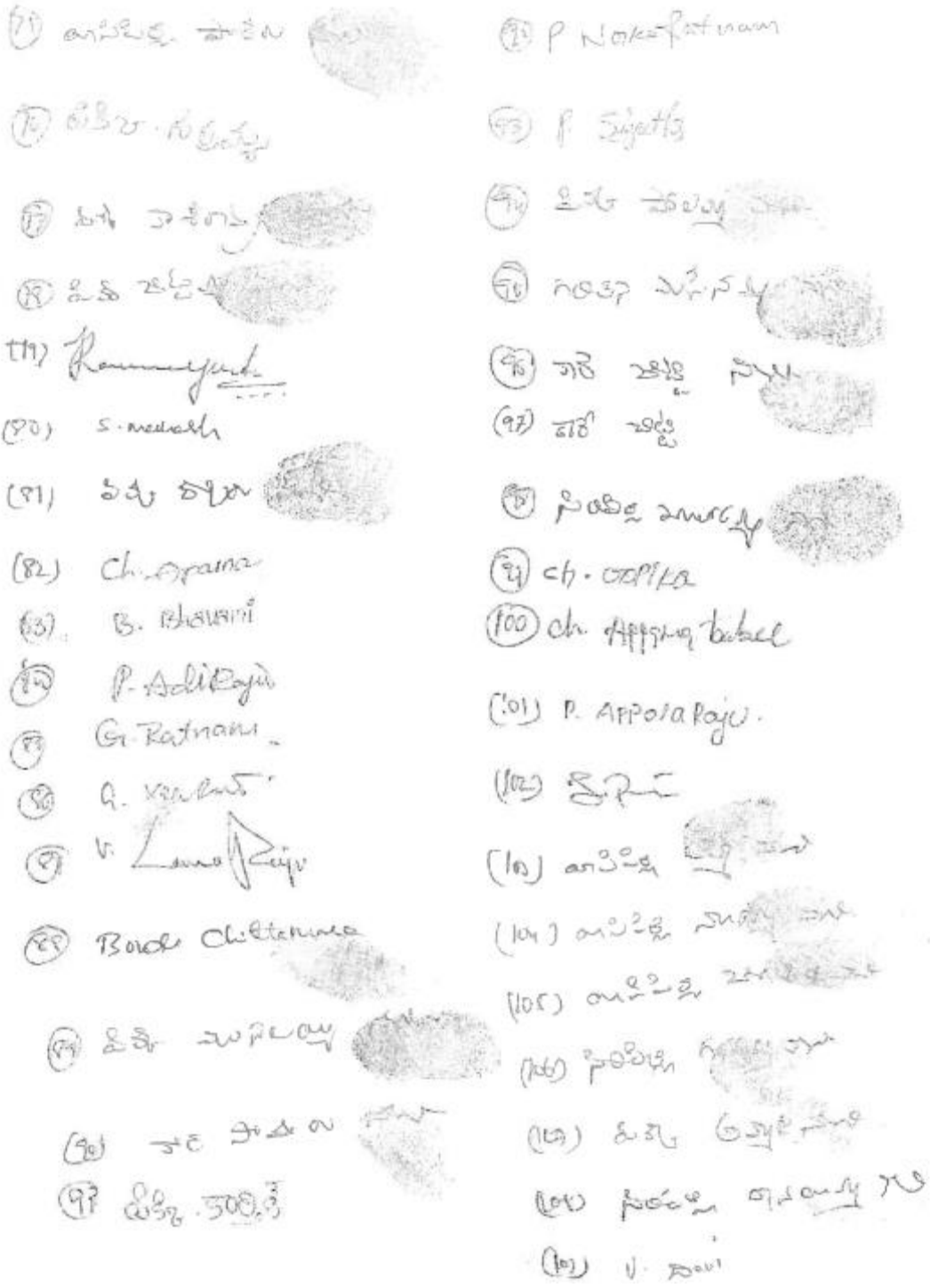
1) [illegible] — DL [illegible]
A.TADU — D.L.PURAM

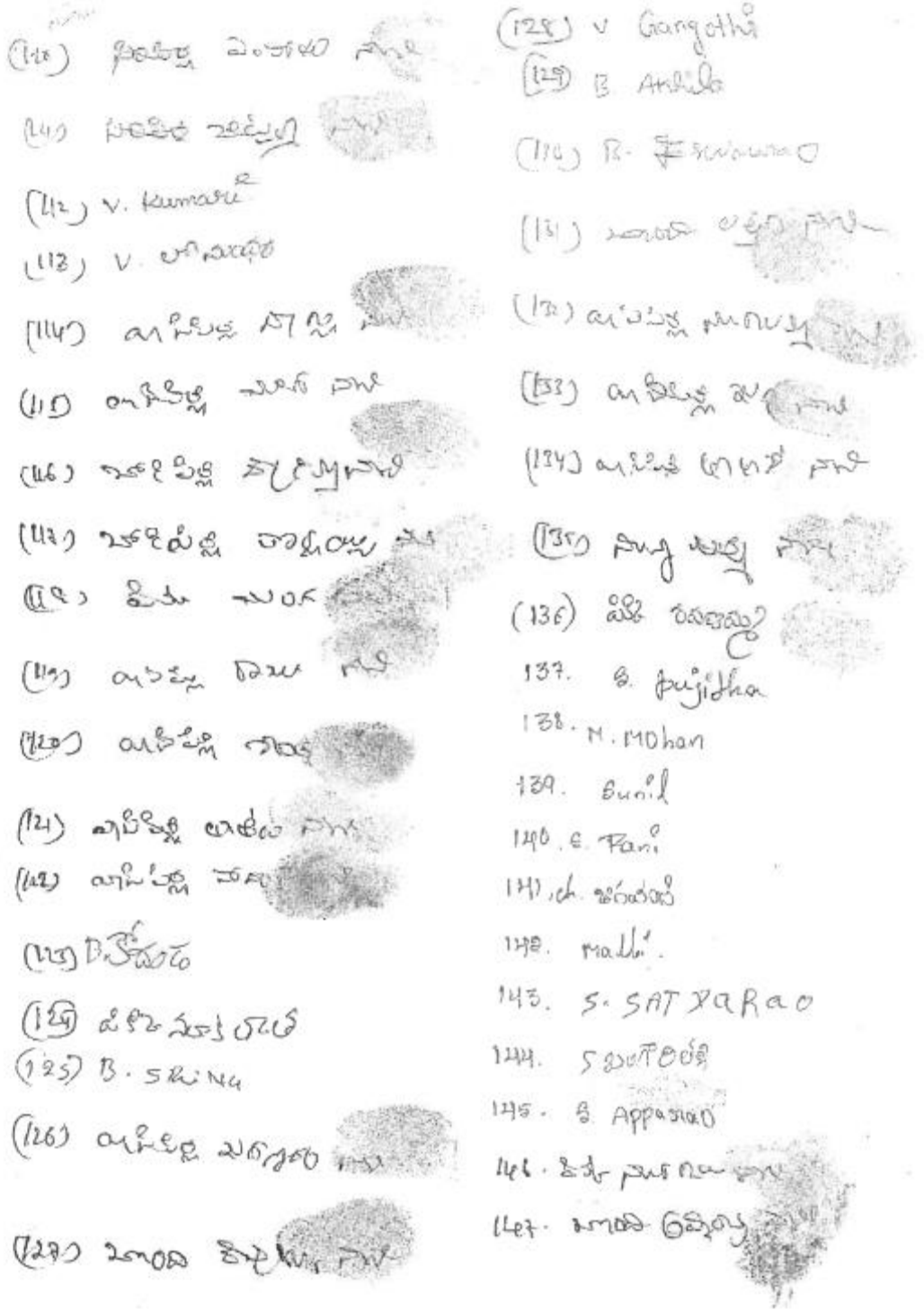
P. Prasad — [illegible]
P. Koti — [illegible]
P. Kondareddy — RajayyaPETA
G. Raju — Rajayy PETA
D. Raju — RajayyPETA
P. Koti — [illegible]
P. Venkatesh — S. Narsipatnam.
P. Chandrasekhar — Satyavaram
S. Ratna — [illegible]
K. venkatesh. — Bangarammapeta
R. Kondalarao — Rajayyapeta
K. Rajesh — Boyapadu
G. Varalakshmi. — Boyapadu
Ch. Sujatha — Boyapadu
V. Lema Raju — Bayapadu
P. Adi Raju — Boyapadu
G. Yesuratnam — Bokkapalem
K. Lakshmi — Boyapadu
K. Appala Raju — Boyapadu
[illegible] — [illegible]
S. [illegible] — [illegible]
P. [illegible] — [illegible]
[illegible] — [illegible]
S. Ramu — [illegible]
K. Lovaraju — R. [illegible]

పేరు	[illegible]	[illegible]
P. Yashoda Krishna	Boyapadu	[illegible]
R. Varalakshmi	[illegible]	R.V.D
D. Nani babu	Gunta Palli	[illegible]
Y. [illegible]	Rajayyapeta	
Y. Annde Raju	Amdepadu	Y. [illegible]
K. [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
B [illegible]	[illegible]	B. [illegible]
K. Ramcharan	[illegible]	
K. pawan	[illegible]	
M. Nani Babu	[illegible]	[illegible]
T. Bhagya [illegible]	[illegible]	[illegible]
Surakamla Govindu	[illegible]	9105826287. S Govindu
T Appa Rao	[illegible]	T Appa[illegible]
V. Raju	Boyapadu	9676915202
P. [illegible]	[illegible]	901438998
S. Lova Raju	Malapadu	
Bala Rao	"	
Ch. Narasimha Rao	Visakhapatnam	[illegible]
K. LOKANADHAM	CPM VSP	[illegible]
M. [illegible]	CPM-NKP	[illegible]
V. [illegible]	JSP([illegible])	[illegible]

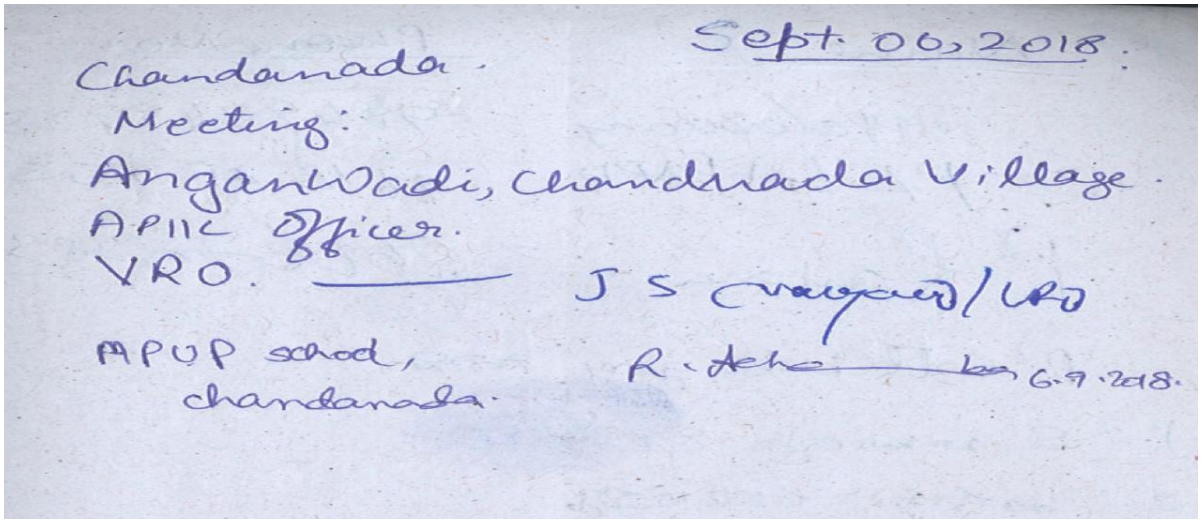


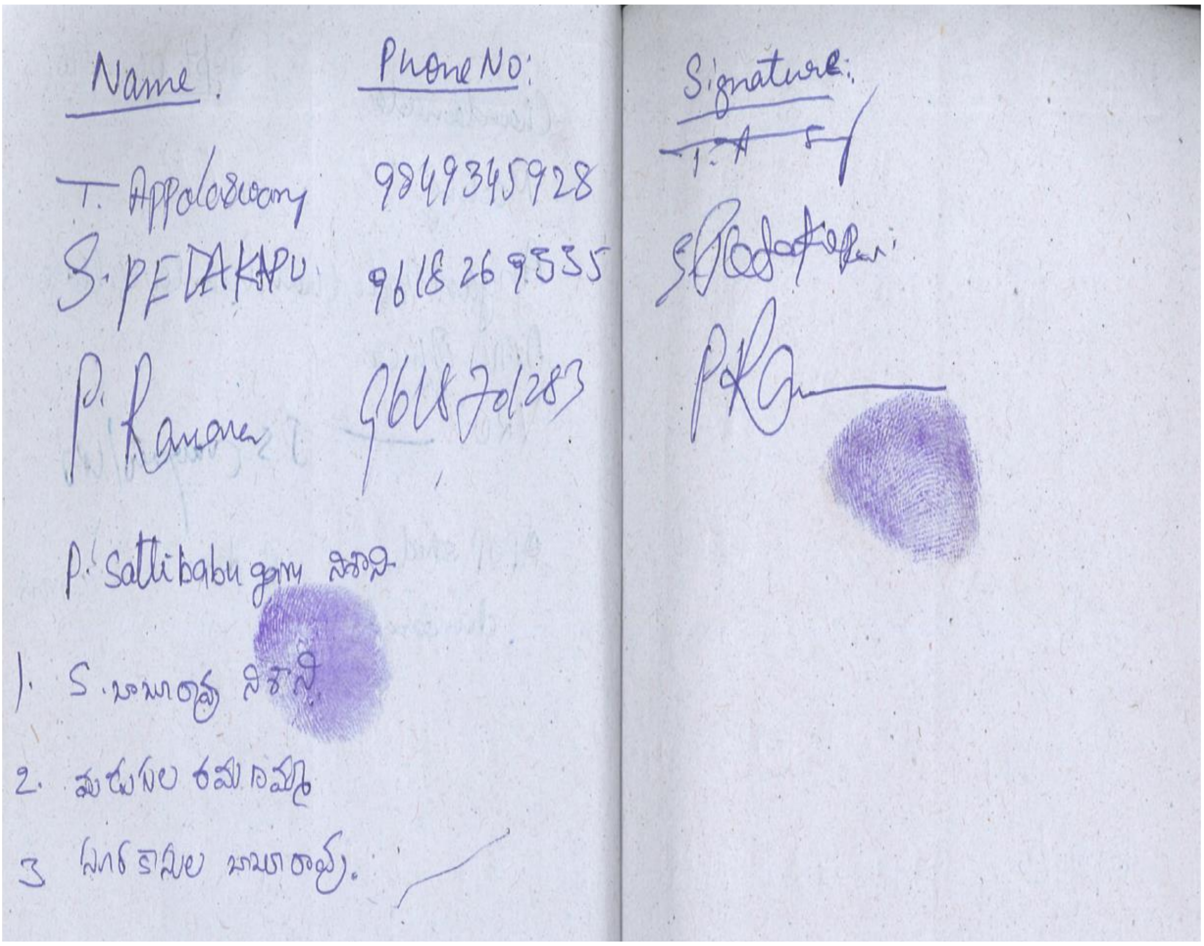






Appendix 3: Minutes of Preliminary Consultations and Signatures of Attendees

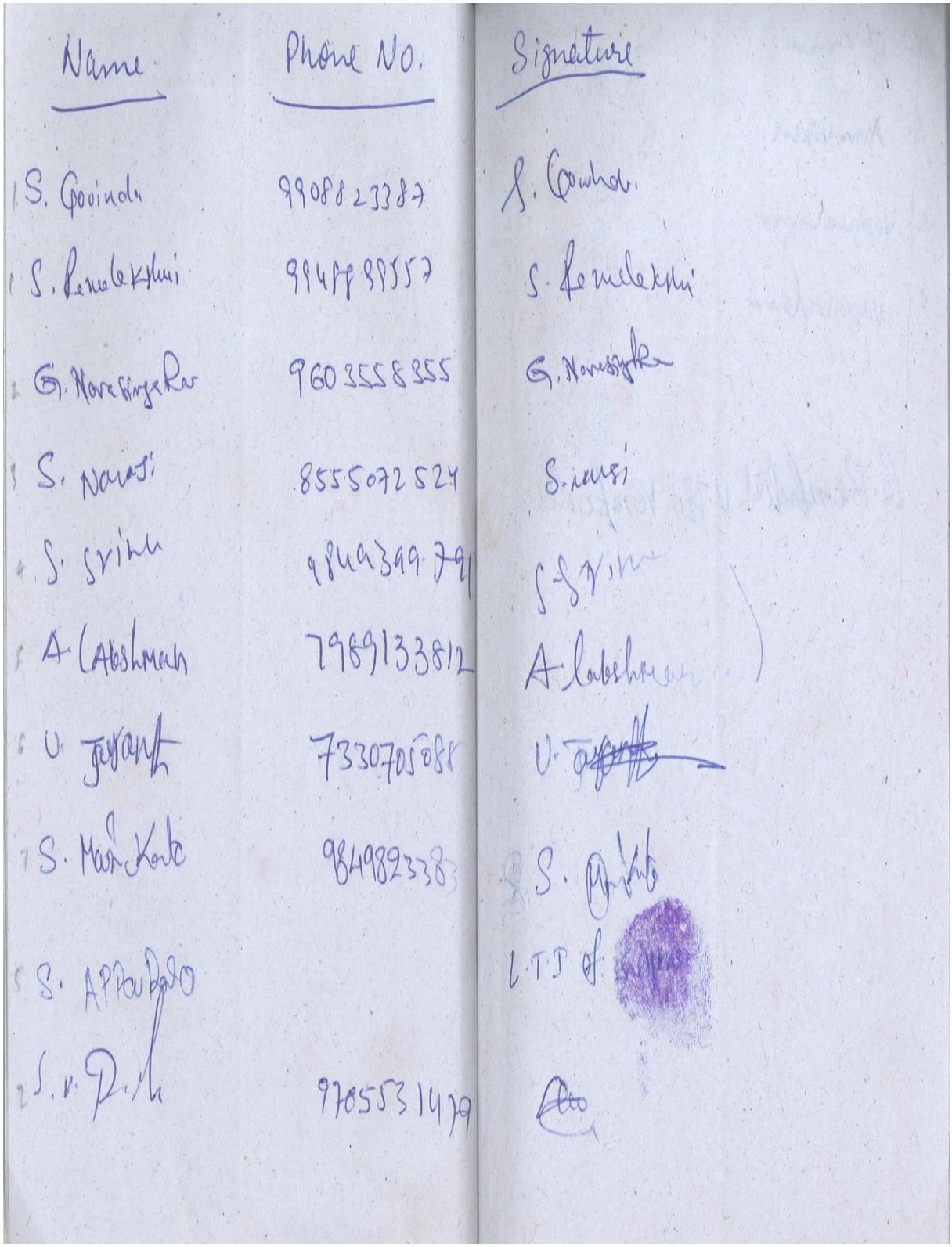




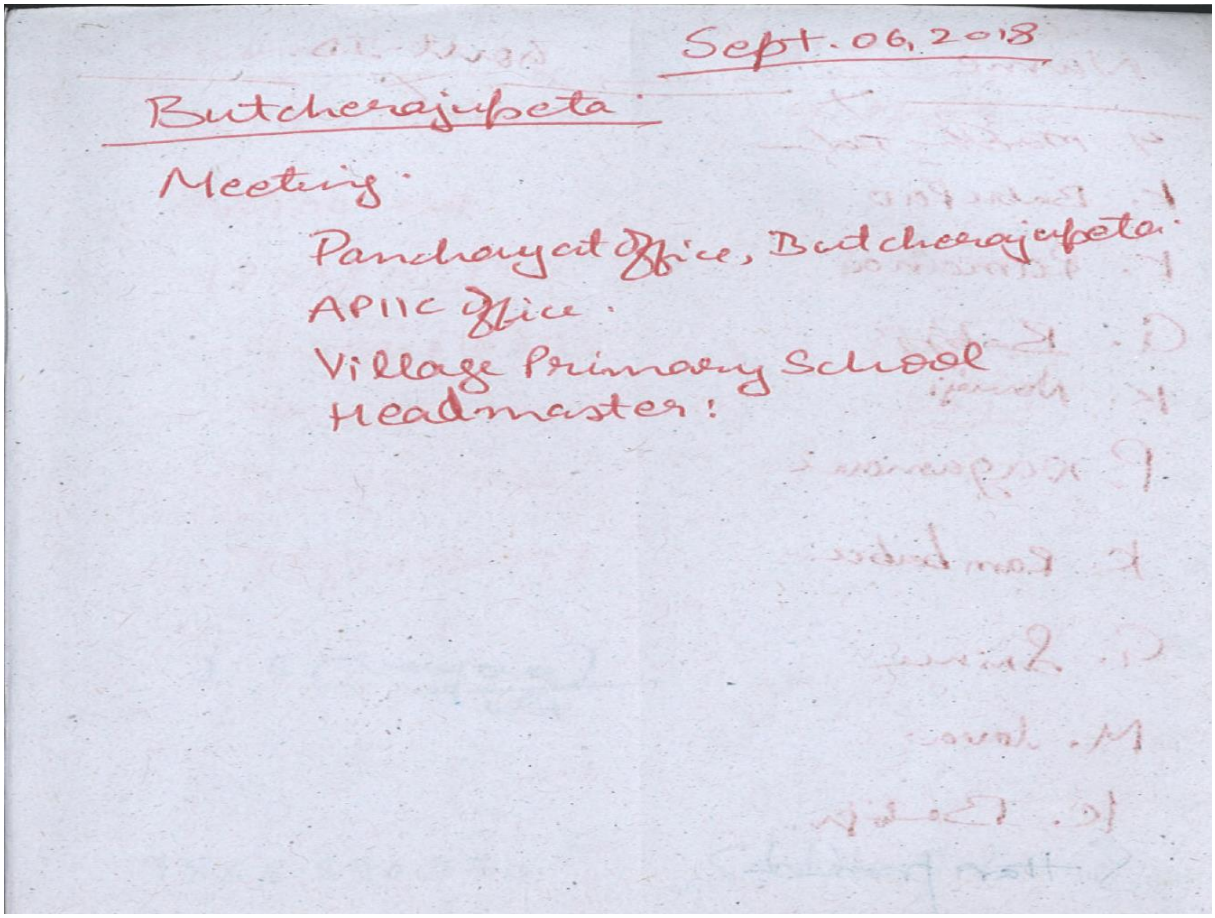
Name.	Phone No:	Signature:
T. Appalaswamy	9849345928	~~T. A~~ S/
S. PEDAKAPU	9618269535	S. Pedakapu
P. Ramana	9618701283	PR

P. Sattibabu garu నిశాని

1. S. బాబూరావు నిశాని
2. ముడుపుల రమణమ్మ
3. సూరకాసుల బాబూరావు.



Name	Phone No.	Signature
1 S. Govinda	9908823387	S. Govinda.
2 S. Ramalakshmi	9949989557	S. Ramalakshmi
3 G. Narasinga Rao	9603558355	G. Narasinga Rao
4 S. Naresh	8555072524	S. naresh
5 S. Srinu	9849399791	S Srinu
6 A Lakshmaiah	7989133812	A. lakshmaiah
7 U. Jayanth	7330705088	U. Jayanth
8 S. Mahaboob	9849823383	S. Mahaboob
9 S. Appa Rao		L.T.I of [illegible]
10 S. V. D. L.	9705531479	

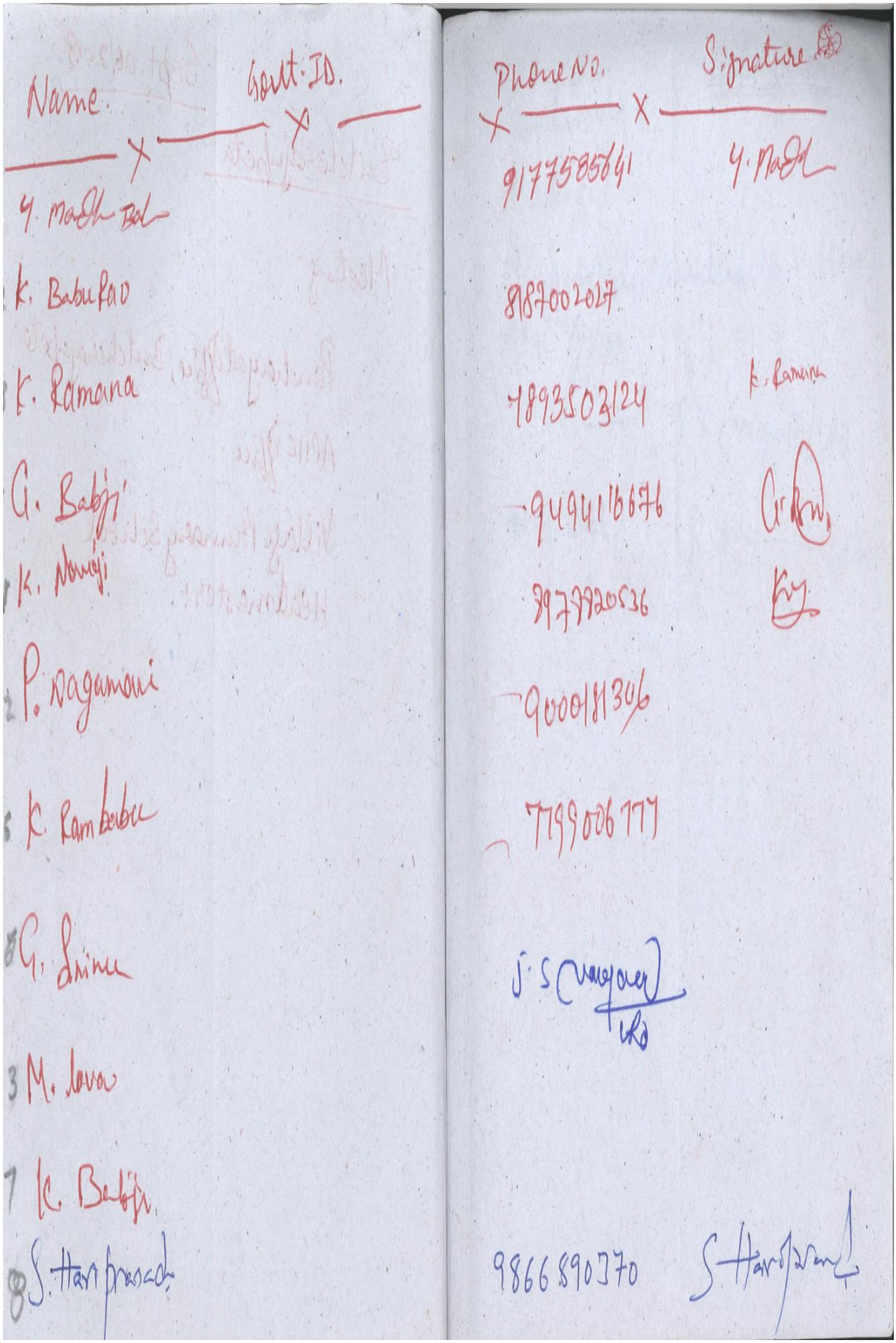


Sept. 06, 2018

Butcherajupeta:

Meeting:

Panchayat Office, Butcherajupeta.
APIIC Office.
Village Primary School
Headmaster!



Name	Govt. ID.	Phone No.	Signature
Y. Madhu Babu		9177585841	Y. Madhu
K. Baburao		8187002027	
K. Ramana		7893503124	K. Ramana
G. Babji		9494116676	
K. Nooji		8977920536	
P. Nagamani		9000181306	
K. Rambabu		7799006777	
G. Lavanya			
M. Lova			
K. Babji			
S. Hariprasad		9866890370	

Minutes of Consultation			
S (V)1.	Stakeholder Consultation- Vempadu	**Date**	September 06, 2018
Purpose	Stakeholder Consultations at Village Level	**Village**	Vempadu
Consultation Place	Flood relief Centre, Vempadu	**No. of Attendees**	5
Conducted by	APIIC and LNTIEL	**Village & Stakeholder Coordinator**	Village Revenue Officer (VRO)
Stakeholder Involved/ Attendees/ Participants	Land Losers, VRO, APIIC &LnTIEL representatives		

Under the VCIC Nakkapalli start-up area lands of Vempadu village affected by land acquisition

- Consultation was initiated by explaining the purpose of the visit, survey requirements and have asked to express their concerns
- People have received 80% compensation and balance need to be disbursed
- No continuous power supply is available in the village
- Groundwater is polluted due to nearby seashore
- Livelihood of the people is agriculture, coconut, mango cultivation
- There is no Primary health centre in the village and hospital is 20 km away
- Nearest high school is 10 km away and degree college is 30 km away.
- Though water supply pipelines are available, drinking water availability is 50%
- Compensation for the trees were not paid

Villagers who have attended the consultation were not ready to sign the meeting attendance sheet as they feel it will be used as their agreement for anything by the Government

Conclusion

- People want disbursement of the compensation be expedited.
- Once the compensation is received, they are willing to cooperate with the development
- As many are uneducated, they require skill development training for livelihood improvement
- No significant environmental concerns related to the development were indicated.

Minutes of Consultation			
S (V)2.	Stakeholder Consultation- Chandanada	**Date**	September 06, 2018
Purpose	Stakeholder Consultations at Village Level	**Village**	Chandanada
Consultation Place	Anganwadi building, Chandanada	**No. of Attendees**	17
Conducted by	APIIC and LNTIEL	**Village & Stakeholder Coordinator**	ANM (Anganwadi)
Stakeholder Involved/ Attendees/ Participants	Land Losers, ANM (Anganwadi), VRO, APIIC &LnTIEL representatives		

Under the VCIC Nakkapalli start-up area lands of Chandanada village affected by acquisition are a major share.

- Consultation was initiated by explaining the purpose of the visit, survey requirements and have asked to express their concerns
- The Census Survey form was explained in Telugu language by ANM
- Topo-survey was conducted for the start-up area
- Land has been acquired and most of the people received the compensation in full and few have received partially
- Affected persons are not willing to leave the village, i.e., their existing residential area
- Compensation amount has been invested by purchasing land in other areas majorly to the other side of the National Highway
- The compensation received for the trees is very meagre
- The annual revenue from each tree is higher than what was given as a one-time compensation for Coconut trees
- Agriculture is the main occupation in the village
- Majority of the adults are uneducated and hence they are not qualified for the jobs in the industries in the locality
- In past many Government officials have promised many facilities as a package for compensation
- Now the officials are replaced with others in their seat and no one is concerned about the package assured during the compensation negotiations
- Package was assured to non-land holders in case if the village will be completely resettled
- Villagers who have attended the consultation were not ready to sign the meeting attendance sheet as they feel it will be used as their agreement for anything the Government dictates

Conclusion

- People want disbursement of the compensation be expedited.
- Once the compensation is received, they are willing to cooperate with the development
- As many are uneducated, they require skill development training for livelihood improvement
- No significant environmental concerns related to the development were indicated.

Minutes of Consultation			
S (V)3.	Stakeholder Consultation- Buchchirajupeta	**Date**	September 06, 2018
Purpose	Stakeholder Consultations at Village Level	**Village**	Buchchirajupeta
Consultation Place	Panchayat office, Buchchirajupeta	**No. of Attendees**	11
Conducted by	APIIC and LNTIEL	**Village & Stakeholder Coordinator**	Village Revenue Officer
Stakeholder Involved/ Attendees/ Participants	Land Losers, Primary School Headmaster, VRO, APIIC &LnTIEL representatives		

Under the VCIC Nakkapalli start-up area lands of Buchchirajupeta village affected by acquisition are very few.

- Consultation was initiated by explaining the purpose of the visit, survey requirements and have asked to express their concerns
- On enquiry on the compensation status, the replies are many have received the compensation for the land in full, few have received partially and few have not received any monies
- The reason told for delayed payment is technical problem at the revenue department side
- Compensation for trees has not been paid
- The people who have not received the compensation are planning to meet the government officials to enquire
- Compensation amount has been invested by purchasing land in other areas
- Compensation amount could was not saved in cash
- There are lot of health issues due to the existing factories in the locality
- There were complains on population from existing industrial facilities in the locality
- Main work of the people for livelihood is agriculture and related work
- Few village persons are working in the nearby factory, majorly they work as daily labourers
- The task given to them in the industries is to fill chemical powder in packets which is very dangerous
- Work safe in nature is allotted to persons other than their village is their observation
- Children study up to 5th standard in the village school and for high school they commute to Nakkapalli High School
- An agreement between the government and the factory to train people of the village for skill development, education and provide employment was made
- Few people have received training under that agreement but they have not received any job opportunities
- As they were not willing to hand over the lands to the industries directly, Government has become mediator on behalf of the industries
- As they are not sure of agriculture income due to scanty rainfall and assurance of employment was made which made them agree to give away their lands
- People here have only general degree, but if they don't have technical degree, they are not qualified for the employment
- Local people don't wish to vacate their villages and want to continue living in their lands and it was already communicated that they cannot survive if migrated to elsewhere
- Few people have left the village as they have handed over the land to government and due to pollution from the existing industries
- The process for land acquisition was started around year 2004
- They have received the compensation a year back
- Ground water in the area is polluted due to existing factories
- Alcohol is a problem in the region as men work hard and resort to it as a relief

- There is no domestic assault on women in the village
- Females in the village work
- Both males and females have land on their names
- The income is spent for family requirements and welfare
- Girls are encouraged to study up to 12th class (Pre-graduation) and Graduation

Conclusion

- People are unsure about their future due to the proposed development
- Provision to the people for training can be suggested
- They have to explore more options for the employment and livelihood
- The provision to avoid polluting industries to be made and Industrial norms to be strictly followed
- Green belt cover will have to be assured

Appendix 4: Minutes of Public Hearing and Consultations

ANDHRA PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VISAKHAPATNAM
D.No. 39-33-20/4/1, Madhavadhara Vuda Colony, Visakhapatnam - 530018,
Phone: 0891 -2755356

Lr. No.PH-36/PCB/RO-VSP/2021- 2524 **Date:30.01.2021**

To
The Zonal Manager,
M/s.Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited,
(A Government of Andhra Pradesh Undertaking),
Special Projects Zone,
One Stop Service Center,
Atchuthapuram,
Visakhapatnam District-531011.

Sir,

Sub :- APPCB – RO, Visakhapatnam – M/s.Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited - Establishment of "Industrial Park" by M/s.APIIC at Butchirajupeta(V), Donivani Lakshmi Puram(V), Vemapadu(V), Chandanada(V) & Rajayyapeta(V), Nakkapalli(M), Visakhapatnam District with an investment of Rs.1191 Crores - Environmental Public Consultation scheduled on 25.11.2020 at 11.00 AM – Minutes – Communicated – Reg.

Ref :- Environmental Public Consultation held on 25.11.2020.

* * *

With reference to the above, a copy of the minutes of the Environmental Public consultation held on 25.11.2020 for the Establishment of "Industrial Park" by M/s.APIIC at Butchirajupeta(V), Donivani Lakshmi Puram(V), Vemapadu(V), Chandanada(V) & Rajayyapeta(V), Nakkapalli(M), Visakhapatnam District with an investment of Rs.1191 Crores is herewith forwarded for information.

Please acknowledge the receipt of the same.

Yours faithfully,

Environmental Engineer

Encl :
1. Copy of the Minutes of EPC.
2. Copy of Attendance of EPC.
3. CD of EPC Proceedings.
4. Copies of the Representations received from the Public/NGOs (19 Nos).

Minutes of the Environmental Public Consultation held on 25.11.2020 at 11.00A.M, at Project site, Rajayyapeta (V), adjacent to Rajayyapeta – Boyapadu Village road, Nakkapalli (M), Visakhapatnam Dist., on the proposed Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Industrial Park in an extent of 1577.87 Ha in Villages of Butcirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M), Visakhapatnam District.

Panel Members presented

Sri. M. Venugopal Reddy, IAS Joint Collector & Addl. District Magistrate, Visakhapatnam District.	Chairman
Sri. Meera Subhan Shaik, Environmental Engineer (FAC), A.P. Pollution Control Board, Regional Office, Visakhapatnam	Member

PROJECT AUTHORITIES :

1. Sri Nageswar Rao,	Chief General Manager, APIIC Atchutapuram, Visakhapatnam
2. Susruta Amirapu,	Associate Project Consultant, M/s. L&T Infrastructure Engineering Limited, Hyderabad. Environment Consultancy of the project.

The list of officers and public present at the meeting is appended as Annexure.

At the outset, the Environmental Engineer(FAC), Regional Office, Visakhapatnam, Andhra Pradesh Pollution Control Board, welcomed the gathering attended to the Public Consultation and informed that as per the Environment Impact Assessment

Notification,2006 issued by MoEF&CC, the proposed APIIC industrial park comes under schedule category A – 7(c) and as per the Terms of Reference (TOR) dated 12.06.2019 issued to APIIC by MoEF&CC for the proposed project, the APIIC has carried out Environmental Impact assessment study during April to June 2018 within 10 Km radius of the proposed site. As per the procedure laid down by the Ministry of Environment, Forests & Climate Change, Government of India vide Notification S.O. No. 1533, Dt. 14.09.2006, the Public Consultation is being conducted for the APIIC Industrial Park proposed in an extent of 1577.87 Ha (3899 Acres) area covered in villages of Butchirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M), Visakhapatnam District with an estimated project cost of Rs. 1191.0 Cr. He informed that Public Consultation is being conducted under the chairmanship of the Joint Collector & Addl. District Magistrate and assisted by A.P. Pollution Control Board officials. A.P. Pollution Control Board has issued a Paper Notification of the Public Consultation inviting concerns of the local affected people and the people having a plausible stake regarding the proposed project. The Notification published in the newspapers of "The Times of India" (English) and "Sakshi" (Telugu) on 24.10.2020 and the executive summaries and the EIA report were displayed at the O/o the Collector & District Magistrate, Visakhapatnam, O/o the District Revenue Officer, Visakhapatnam, Revenue Divisional Officer, Visakhapatnam, O/o the Chief Executive Officer, Zilla Parishad, Visakhapatnam, O/o the General Manager, District Industries Centre, Visakhapatnam, O/o the Revenue Divisional Officer, Narsipatnam, Visakhapatnam District, O/o the Tahasildar, Nakkapalli (V & M), Visakhapatnam District, O/o the Panchayat Secretaries of the villages Butchirajupeta, Rajayyapeta, Donivani Lakshmi Puram, Vempadu & Chandanada of Nakkapalli Mandal, Visakhapatnam District as mentioned in the Public Consultation notification. He requested the public attended to the public consultation can express their views, suggestions & objections if any in the public consultation meeting or representations can also submit to A.P. Pollution Control Board, Regional Office, Visakhapatnam and the entire public consultation meeting recorded and the Audio & Video of the Public Consultation proceedings submitted to the Ministry of Environment, Forests & Climate changes for further examination. He requested the Chairman of Public Consultation to preside over the Public Consultation to conduct further proceedings.

The Joint Collector & Addl. District Magistrate, Chairman of the Public Consultation while welcoming Public attended to the public consultation and informed that for development of industrial areas, the government identifies new places to establish new industries and due to establishment of industries there may be impact on the surrounding environment and pollution control measures implemented as per the directions & suggestions prescribed by the MoEF&CC and other Environmental studies also taken-up from time to time to take preventive measures. He informed that the proposed project requires Environmental Clearance from Ministry of Environment & Climate Change; hence the Public Consultation is being conducted. He informed that the public can express their opinions, suggestions & objections if any or written representation and without any editing video & audio of the entire public consultation proceedings submitted to the Ministry of Environment, Forests & Climate changes for further examination. He requested to start the proceedings.

The Environmental Engineer(FAC) then requested the Zonal Manager, APIIC, Visakhapatnam to inform the details of project.

Sri Nageswar Rao, Chief General Manager, APIIC Atchutapuram, Visakhapatnam as the project proponent while explaining the details of the proposed project informed that land acquisition for the proposed Industrial Park at Nakkapalli is in process and the proposed Industrial Park is a part of Visakhapatnam – Chennai industrial corridor which is a joint venture of Govt. of India &State Government. He said that the proposed Industrial Park is a Multi-Product Project with different types of industries, proposed in an extent of 3899 Acres in the villages of Butcirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli Mandal. He informed that greenbelt proposed in an extent of 610 Acres and there would be about 30,000 direct employment and about 60,000 indirect employment during construction and after commissioning of the Industrial Park. He stated that about 1.0 Lakh Crore investments expected due to development of the Industrial Park. He requested the representative of M/s. L&T Infra Engineering Environmental consultant to explain the project details.

Susruta Amirapu, Associate Project Consultant, M/s. L&T Infrastructure Engineering Limited, Hyderabad informed that the Visakhapatnam–Chennai Industrial Corridor (VCIC) is the India's first coastal corridor proposed to be developed

in an extent of 3899 Acres in the villages of Butchirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M). She said that as per the TOR issued to APIIC by MoEF&CC on 12.06.2019, Environmental Impact Assessment Study was carried out during April to June 2018 within 10 Km radius of the proposed site. She informed that the proposed Industrial Park is located within 60 Km from Visakhapatnam towards South-West Direction and the National High-way is at a distance of 16.30 Km, Gullipadu Railway station is at a distance of 7.20 Km, Gangavaram Port is at a distance of 60 Km and Visakhapatnam Air Port is at a distance of 64 Km from the proposed Industrial Park. She informed that industrial park cater the needs of the industrial establishments viz., Pharmaceuticals, Chemicals and Petrochemicals, Industrial and Consumer Electronics, Auto and Auto components; Aerospace and Defense, Light and heavy Engineering, CRZ permissible hazardous material storages, Building Materials, Industry/Non Metallic minerals, MSME, Food and Agro Processing Industry. The proposed 3899 Acres of the Industrial Park will be developed viz., Industrial Area - 32%, Logistics & Truck Terminal - 2%, Supporting Facilities - 0.9%, Residential/Social Infrastructure – 7.0% and Greenbelt Area - 15.0 5%. She stated that the Zoning criteria is designed viz., up to 50 mts around the habitation green belt developed, 50 to 250 mts is allotted to Orange & Green category industries, Red category industries established from 250 to 500 mts and after 500 mts Bulk drug & Chemical industries established and the required electricity met from AP TRANSCO & DG Sets. She said that during construction phase, 300 MVA electricity met from AP TRANSCO and the water requirement during construction phase 0.5 MLD and 16.15 MLD during operation phase and water withdrawn from Yeleru left main canal. She informed that a Common Effluent Treatment Plant is proposed and the treated water disposed into Sea through marine outfall after obtaining CRZ & MoEF&CC Clearance and no untreated water disposed into the village ponds or creeks and a common STP proposed, the treated water utilized for green belt development. The generated domestic waste disposed to Municipal Solid Waste Treatment facility; the Hazardous waste disposed to TSDF; 61 Acres are allocated for TSDF establishment; Green belt developed in 615 Acres; the Member Industries develop 33% greenbelt within the premises of individual industries. She stated that to develop all required infrastructure facilities the estimated investment would be Rs.1191 Cr. and about 12,000 people would be employed during construction phase and direct employment opportunities for 30,000 people and indirect employment/livelihood for 72,000 people due to the

establishment of industries in the proposed Industrial Park. She informed that the member industries established follow the CSR Acts/Rules and spend their CSR funds for development of Education, Medical, Employment, Sanitation & Social activities. As per the EIA study it was recorded viz., buildings - 47%, agriculture lands - 8%, Water tanks - 6.5%, Habitation - 3%, Open lands 12% and informed that Environmental Monitoring conducted in 6 places to assess the air, sound & soil quality and carried out ground water &surface water quality monitoring at 2 places, and as per the analysis the values were recorded within the standards stipulated by Central Pollution Control Board. She informed that no animals & birds, endangered species were found except Peacocks etc. and the Sea waters are also tested and found that no pollution. She said that 48 villages are existing within 10 km radius with 1,46,000 population out of which 41% people are dependent on cultivation and other communal livelihood activates and 50% are literates; Out of total 3899 acres APIIC has acquired 2850 Acres; 2000 Acres are Patta Lands and 1897 Acres Govt., land; Resettlement & Re-habitation activities taken care. She stated that the dust pollution generated during construction phase mitigated by sprinkling of water, PUC authorized vehicles only utilized during construction activities; PPE kits provided to the workers; no open disposal of wastes generated during development period; OSHO standards & safety precautions adopted. She said that the Member industries also implement air & water pollution control measures and the Ambient Air Quality Monitoring conducted and air quality within the stipulated annual average standards and no untreated water disposed into the village ponds or creeks and the treated water disposed into Sea through marine outfall after obtaining CRZ clearance from MoEF&CC. She informed that transport Management plan, Flood water management plan, Storm-water management plan implemented and Environment Management wing is proposed in environment management plan for which Rs.260 Cr estimated to incur during pre-construction phase and Rs.13.9 Cr after construction phase. She said that disaster Management Plan is followed,Onsite & Offsite emergency plans followed, there would be about 30,800 direct employment and about 72,000 indirect employment opportunities during and after development of the Industrial Park; about 1.0 Lakhs Crores investments are expected after development of the Industrial Park; the project would add the GDP to State & Central Government.

The Environmental Engineer(FAC) has informed that they have received 4 No. of written representations received from Sri K. Lokanadham, CPM, Sri M. Appala Raju, CPI

Sri K. Venkata Ramana, Upamaka has opposed the proposed project and informed without informing the name and type of industries proposed to be established, conducting public consultation is not correct. Hence public consultation should be cancelled and rescheduled after payment of compensation. He said that public consultation to be conducted industry wise.

Smt P. Chinnamma, R/o Patimara, Vempadu said that her lands will not be handed over until to receive the total compensation and she has informed that she is not against the establishment of the industries.

Sri Ravi Nooka Raju, R/o Amalapuram and Sri Ravi Apparao, R/o Amalapuram has informed that they are not received the compensation amount so far to their lands.

The Joint Collector & Addl. District Magistrate and the Chairman of the Public Consultation while concluding the Public Consultation, he has informed that the speakers have expressed their opinion freely, some of them have also mentioned that they were not paid proper compensation and disparity in payment of compensation for trees, lands and houses, etc. In this regard one Special Deputy Collector was already appointed to each village to resolve the compensation issues, if any. He has further informed that the proceedings of the public consultation in the form of Audio & visual recording along with the written minutes of the Public Consultation would be forwarded to the Competent Authority for taking necessary action on the proposed Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Industrial Park in an extent of 1577.87 Ha in Villages of Butcirajupeta, Donivani Lakshmi Puram, Vempadu, Chandanada, Rajayyapeta of Nakkapalli (M), Visakhapatnam District. Finally thanked everybody for participating in the public hearing.

Environmental Engineer(FAC)
A.P. Pollution Control Board,
Regional Office, Visakhapatnam

Joint Collector (RB&R),
Visakhapatnam District
Nominee of the District Collector,
Visakhapatnam District

Appendix 5: 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.

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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 6: National Ambient Air Quality Standards released during November 2009

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-DispersiveInfra-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 mean 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 values, 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 7: National 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 energy mean of the noise level over a specified period.

Appendix 8: IS10500:2012 drinking water standards for Groundwater

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		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
	(Max)					
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	Appendix 11 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 9: Designated Best Use Classification of Inland Surface Water of National Rivers Conservation Directorate, MoEF&CC for Surface Water

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 SO_4), 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 10: Soil standards by Indian Council of Agricultural Research, New Delhi

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 11: Primary Water Quality Standards for Coastal water (SW–IV)

Primary Water Quality Standards

Primary Water Quality Criteria for Class SW-IV Waters (For Harbour waters)			
S. No	**Parameter**	**Standards**	**Rationale/Remarks**
1	pH range	6.0-9.0	To minimize corrosive and scaling effect
2	Dissolved oxygen	3.0mg/l or 40% Saturation value whichever is higher	Considering the biodegradation of oil and inhibition to oxygen production through photosynthesis
3	Colour and odour	No Visible Colour or Offensive Odour	None from reactive chemicals which corrode paints/metallic surfaces
4	Floating materials	10mg/l Oil, Grease and Scum (including petroleum products)	Floating matter should be free from excessive living organisms which may clog or coat operative parts of marine vessels/equipment
5	Faecal coliform	500/100 ml (MPN)	Not exceeding 1000/100ml in 20% of samples in the year and in 3 consecutive samples in monsoon months
6	Biochemical Oxygen Demand (BOD) (3 days at 27°C)	5mg/l Decomposable wastes	To maintain water reactively free from pollution caused by sewage and other

Appendix 12: General Standards for Discharge of Environmental Pollutants, GSE 422 E, EPA 1986

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 waste water- 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
4.[19]	***	*	--	***	--
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	30	350	100	100

[19]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.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
	max.				
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.	* * * * * * *				
[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	5.0	--	--	--

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
	(as P), mg/l Max.				
[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 96 hours 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.

[1]Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide NotificationNo.G.S.R.801(E), dated 31.12.1993.

Appendix 13: Checklist for Rapid Environmental Assessment (REA)
REA Checklist

Instructions:

- This checklist is 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: IND: Visakhapatnam Chennai Industrial Corridor, Development Program (VCICDP) Visakhapatnam Node- Nakkapalli Industrial Cluster

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		✓	
• 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?		✓	Not Applicable
• 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?		✓	
• Road blocking and/or increased traffic during construction of facilities		✓	
• Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		✓	
• Contamination of surface and ground waters due to improper waste disposal?		✓	

Appendix 14: LHS and RHS of Water Supply Pipeline from YLMC to SST

For the screening of the corridor, 3.0 m on both sides of the existing road having a current width of 6 to 7 m from Yeluru Left Main canal to Adda Road Junction and 6 – 8m on both sides of NH16 (4 lane road) on were considered.
Following are the overall observations on the environment attributes of the water pipeline corridor proposed from YLMC to Nakkapalli Industrial cluster.

(i) Along the entire alignment, ~ 750 numbers of trees having girth size ≥1.0 m is observed on LHS and ~970 on RHS. The Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak). Other than these banana and mango farm is observed at the Junction of the proposed APSRDC road corridor
(ii) Total numbers of culverts observed are 30. One culvert under construction is observed at stream crossing near Lingapuram. It is also observed, one old bridge over VarahaNadi and new bridge under construction over VarahaNadi.
(iii) VarahaNadiis crossing between villages Jalluni and Yendapalli and one stream is crossing near Lingapuram. VarahaNadi is flowing parallel to the crossing area on LHS from village Kailasapatnam and Etikoppaka
(iv) Avenue plantation (Social forestry) also observed between villages Kailasapatnam and Ramachandrapuram.
(v) PayakaraopetaReserved forest boundary is abutting the proposed alignment area. Hills also abutting the crossing area at two locations.
(vi) There is a Railway bridge crossing over Adda Road Railway station near ChinnaGummuluru village. Three major road junctions are falling in the crossing area namely Proposed Road Corridor near Kagita to NH16, NH16 to Narsipatnam Road and NH16 bypass to Adda Road village
(vii) Transmission lines are observed all along the alignment area.
(viii) Reliance Jio Infocomm Limited (RJIL) underground pipeline was also observed mostly on LHS and some locations on RHS
(ix) Open solid waste dumping was also observed
(x) Construction work for Polavaram Left Main Canal is undergoing near Etikoppakka. Huge pile up of Construction & Demolition (C&D) waste was also observed near the construction site
(xi) Box type storm water drainage system was also observed near Nakkapalli village on both sides on NH16

Following are the overall observations on the social attributes:

(i) The settlements falling along the alignment are Yendapalli, Jalluni, TangeduKotavuratla, Kailasapatnam, Ratnalapalem, Gottivada, Darallapadi, ChinnaGummuluru, PeddaGummuluru, Pallipalem and Nakkapalli.
(ii) Huts, Shops/Hotels/Eateries, Structure etc., were observed in mostly all the above villages. However, two villages namely Kotavuratla and Nakkapalli, large scale commercial activities were also observed.
(iii) Total 4 Nos. temples on LHS and 3 Nos. temples & 2 Nos. tree of goddesses on RHS were observed
(iv) Cattles are crossing at three locations along the alignment.
(v) One small brick manufacturing unit near village Jalluni (RHS), Sugar factory (RHS) at Darallapadi and Hetro Complex (Private Road) near Nakkapalli village were observed

The entire water pipeline alignment (38.3 km) is divided into different Sections of 5.0 km each and observations are listed in the following table.

S. No.	Attributes along the alignment/ Corridor	LHS		RHS			
0 to 5.0 km							
	Settlements	(xxviii) Three settlements falling are Yendapalli at Chainage 0 to 400, Jalluni at chainage 2600 to 3000 and Tangedu at 4000 to 4400		(xxix) Three settlements falling are Yendapalli at Chainage 0 to 400, Jalluni at chainage 2600 to 3000 and Tangedu at 4000 to 4400			
1	Following are observed in the settlements crossing area	(xxx) Yendapalli		(xxxi) Jalluni		(xxxii) Tangedu	
		(xxxiii) LHS	(xxxiv) RHS	(xxxv) LHS	(xxxvi) RHS	(xxxvii) LHS	(xxxviii) RHS
	Huts	(xxxix) Yes	(xl) Yes	(xli) Yes	(xlii) Yes	(xliii) Yes	(xliv) Yes
	Shops/Hotels/Eateries	(xlv) -	(xlvi) -	(xlvii) Yes	(xlviii) Yes	(xlix) -	(l) -
	Structure	(li) -	(lii) -	(liii) -	(liv) -	(lv) Yes	(lvi) Yes
	Any Other (Compound/Wall etc.)	(lvii) -	(lviii) Yes	(lix) Yes	(lx) Yes	(lxi) Yes	(lxii) Yes
2	Number of Trees and its types (Tentative)	(lxiii) 120 to 130 (lxiv) Major tree species consist of Albizia saman (Nidraganneru), Terminalia catappa (Badam), Tamarindus Indica (Chinta), Borassus flabellifer (Taadi), Casuarinaequisetifolia (Sarugudu), Ficus religiosa (Raavi), Ceiba pentandra (Buruga), Cocos nucifera (Kobbari), Anacardium occidentale (Jeedimamidi) and Tectona grandis (Teak)		(lxv) 150 to 160 (lxvi) Major tree species consist of Albizia saman (Nidraganneru), Terminalia catappa (Badam), Tamarindus Indica (Chinta), Borassus flabellifer (Taadi), Casuarinaequisetifolia (Sarugudu), Ficus religiosa (Raavi), Ceiba pentandra (Buruga), Cocos nucifera (Kobbari), Anacardium occidentale (Jeedimamidi) and Tectona grandis (Teak)			
3	Culverts & Bridges	(lxvii) 4 Nos.		(lxviii) 4 Nos. (lxix) One old bridge over VarahaNadi at Chainage 1600 (lxx) New bridge under construction over VarahaNadi at Chainage 1600			
4	Major Junctions	(lxxi) No		(lxxii) No			

S. No.	Attributes along the alignment/ Corridor	LHS		RHS			
5	Railway Crossing	No		No			
6	Canal	Yes (Yeluru Left Canal at Chainage 0)		(lxxiii) Yes (Yeluru Left Canal at Chainage 0)			
7	Reserved Forest	No		No			
8	Avenue Plantation (Social Forestry)	No		No			
9	Religious Places (Temple/Trees etc.)	No		No			
10	Hills	No		No			
11	River /Streams	(lxxiv) VarahaNadi between Chainage 1600 to 1800		(lxxv) VarahaNadi between Chainage 1600 to 1800			
12	Transmission lines	Yes		Yes			
13	Others (Petrol Pumps)	No		No			
14	Industries and its boundaries	No		Yes (small brick factory) at Chainage 2200			
15	Other Pipelines	Yes (RJIL Pipeline)		Yes (RJIL Pipeline)			
16	Cattle crossing Observed	No		No			
5.0 to 10 km							
	Settlements	(lxxvi) Three settlements falling are Kotavuratla at chainage 6100 to 6800, Kailasapatnam at chainage 7400 to 8200 and Ratnalapalem at chainage 8400 to 8600		(lxxvii) Three settlements falling are Kotavuratla at chainage 6100 to 6800, Kailasapatnam at chainage 7400 to 8200 and Ratnalapalem at chainage 8400 to 8600			
	Following are observed in the settlements crossing area	(lxxviii) Kotavuratla		(lxxix) Kailasapatnam		(lxxx) Ratnalapalem	
		(lxxxi) LHS	(lxxxii) RHS	(lxxxiii) LHS	(lxxxiv) RHS	(lxxxv) LHS	(lxxxvi) RHS
	Huts	(lxxxvii) Yes	(lxxxviii) Yes	(lxxxix) Yes	(xc) Yes	(xci) -	(xcii) -
	Shops/Hotels/Eateries	(xciii) Yes	(xciv) Yes	(xcv) Yes	(xcvi) Yes	(xcvii) -	(xcviii) -
	Structure	(xcix) Yes	(c) -	(ci) -	(cii)-	(ciii) -	(civ) -

S. No.	Attributes along the alignment/ Corridor	LHS		RHS			
	Any Other (Compound/Wall etc.)	(cv) -	(cvi) Yes	(cvii) -	(cviii) -	(cix) -	(cx) -
2	Number of Trees and its types (Tentative)	(cxi) 100 - 110 (cxii) Major tree species consist of Albizia saman (Nidraganneru), Terminalia catappa (Badam), Tamarindus Indica (Chinta), Borassus flabellifer(Taadi), Casuarinaequisetifolia (Sarugudu), Ficus religiosa (Raavi), Ceiba pentandra (Buruga), Cocos nucifera (Kobbari), Anacardium occidentale (Jeedimamidi) and Tectona grandis (Teak)		(cxiii) 140 - 150 (cxiv) Major tree species consist of Albizia saman (Nidraganneru), Terminalia catappa (Badam), Tamarindus Indica (Chinta), Borassus flabellifer(Taadi), Casuarinaequisetifolia (Sarugudu), Ficus religiosa (Raavi), Ceiba pentandra (Buruga), Cocos nucifera (Kobbari), Anacardium occidentale (Jeedimamidi) and Tectona grandis (Teak)			
3	Culverts & Bridges	(cxv) 4 Nos. + 1 under construction at chaiange 5600		(cxvi) 4 Nos. + 1 under construction at chaiange 5600			
4	Major Junctions	(cxvii) No		(cxviii) No			
5	Railway Crossing	No		No			
6	Canal	(cxix) No		(cxx) No			
7	Reserved Forest	No		No			
8	Avenue Plantation (Social Forestry)	No		No			
9	Religious Places (Temple/Trees etc.)	Yes (1 No.)		Yes (One temple and One Tree of Goddesses)			
10	Hills	No		No			
11	River /Streams	(cxxi) Stream crossing at Chainage 5600 (cxxii) VarahiNadi abutting at chainage 9000 to 10000		(cxxiii) Stream crossing at Chainage 5600			
12	Transmission lines	Yes		Yes			
13	Others (Petrol	Yes at chainage 5700		No			

S. No.	Attributes along the alignment/ Corridor	LHS	RHS
	Pumps)		
	Industries and its boundaries	No	No
	Other Pipelines	Yes (RJIL Pipeline)	Yes (RJIL Pipeline)
	Cattle crossing Observed	No	No
10 to 15 km			
	Settlements	(cxxiv) One settlement falling is Gottivada at chainage at 11800 to 12000	(cxxv) One settlement falling is Gottivada at chainage at 11800 to 12000
	Following are observed in the settlements crossing area	(cxxvi) Gottivada	
		(cxxvii) LHS	(cxxviii) RHS
	Huts	(cxxix) Yes	(cxxx) Yes
	Shops/Hotels/Eateries	(cxxxi) Yes	(cxxxii) Yes
	Structure	(cxxxiii) -	(cxxxiv) -
	Any Other (Compound/Wall etc.)	(cxxxv) -	(cxxxvi) -
	Number of Trees and its types (Tentative)	(cxxxvii) 140 – 150 (cxxxviii) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium*	(cxxxix) 180 - 200 (cxl) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)

S. No.	Attributes along the alignment/ Corridor	LHS	RHS
		occidentale (Jeedimamidi) and *Tectona grandis* (Teak)	
	Culverts & Bridges	(cxli) 10 Nos.	(cxlii) 10 Nos.
	Major Junctions	(cxliii) No	(cxliv) No
	Railway Crossing	No	No
	Canal	(cxlv) No	(cxlvi) No
	Reserved Forest	No	Yes Abutting at chainage 10600 to 11400)
	Avenue Plantation (Social Forestry)	Yes (At chaiange 10000 to Chainage 15000)	Yes (At chaiange 10000 to Chainage 15000)
	Religious Places (Temple/Trees etc.)	No	Yes (One Tree of Goddesses)
	Hills	No	Yes Abutting at chainage 10600 to 11400)
	River /Streams	(cxlvii) VarahiNadi abutting at chainage 10000 to 15000	(cxlviii) No
	Transmission lines	Yes	Yes
	Others (Petrol Pumps)	No	No
	Industries and its boundaries	No	No
	Other Pipelines	Yes (RJIL Pipeline)	No
	Cattle crossing Observed	Yes (Two Locations)	Yes (Two Locations)
15 to 20 km			
	Settlements	(cxlix) One settlement falling is Darallapadi at chainage at 17600 to 18000	(cl) One settlement falling is Darallapadi at chainage at 17600 to 18000
	Following are observed in the settlements crossing area	(cli)Darallapadi	
		(clii) LHS	(cliii) RHS
	Huts	(cliv) Yes	(clv) Yes
	Shops/Hotels/Eateries	(clvi) Yes	(clvii) Yes

S. No.	Attributes along the alignment/ Corridor	LHS	RHS
	Structure	(clviii) -	(clix) -
	Any Other (Compound/Wall etc.)	(clx) Yes	(clxi) Yes
2	Number of Trees and its types (Tentative)	(clxii) 160 - 170 (clxiii) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)	(clxiv) 150 - 160 (clxv) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)
3	Culverts & Bridges	(clxvi) 2 Nos.	(clxvii) 2 Nos.
4	Major Junctions	(clxviii) No	(clxix) No
5	Railway Crossing	No	No
6	Canal	Yes (Polavaram Left Main Canal under Construction at Chainage 17000 to 17100	Yes (Polavaram Left Main Canal under Construction at Chainage 17000 to 17100
7	Reserved Forest	No	Yes, Abutting at chainage 15600 to 17000
8	Avenue Plantation (Social Forestry)	No	No
9	Religious Places (Temple/Trees etc.)	Yes (At chainage 16400)	Yes (Two Temples at Chainage 15500)
10	Hills	No	Yes Abutting at chainage 15600 to 17000)
11	River /Streams	(clxx) VarahiNadi abutting at chainage 15000 to 17000	(clxxi) No
12	Transmission lines	Yes	Yes
13	Others (Petrol	No	No

S. No.	Attributes along the alignment/ Corridor	LHS		RHS	
	Pumps)				
	Industries and its boundaries	No		Yes (Darallapadi Sugar Factory at Chainage 18000)	
	Other Pipelines	Yes (RJIL Pipeline)		No	
	Cattle crossing Observed	Yes (One Location)		Yes (One Location)	
20 to 25 km					
	Settlements	(clxxii) Two settlements falling are ChinnaGummuluru at Chainage 20800 to 21600 and PeddaGummuluru at 24200 to 25000		(clxxiii) Two settlements falling are ChinnaGummuluru at Chainage 20800 to 21600 and PeddaGummuluru at 24200 to 25000	
	Following are observed in the settlements crossing area	(clxxiv) ChinnaGummuluru		(clxxv) PeddaGummuluru	
		(clxxvi) LHS	(clxxvii) RHS	(clxxviii) LHS	(clxxix) RHS
	Huts	(clxxx) Yes	(clxxxi) Yes	(clxxxii) Yes	(clxxxiii) -
	Shops/Hotels/Eateries	(clxxxiv) Yes	(clxxxv) Yes	(clxxxvi) -	(clxxxvii) Yes
	Structure	(clxxxviii) Yes	(clxxxix) Yes	(cxc) Yes	(cxci) -
	Any Other (Compound/Wall etc.)	(cxcii) Yes	(cxciii) Yes	(cxciv) -	(cxcv) Yes
	Number of Trees and its types (Tentative)	(cxcvi) 80 - 100 (cxcvii) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra*		(cxcviii) 110 - 120 (cxcix) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)	

S. No.	Attributes along the alignment/ Corridor	LHS		RHS			
		(Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)					
	Culverts & Bridges	(cc) 6 Nos.		(cci) 6 Nos.			
	Major Junctions	(ccii) No		(cciii) No			
	Railway Crossing	Yes (Railway Bridge above Adda Road Railway Station at chainage 21920)		Yes (Railway Bridge above Adda Road Railway Station at chainage 21920)			
	Canal	(cciv) No		(ccv) No			
	Reserved Forest	No		No			
	Avenue Plantation (Social Forestry)	No		No			
	Religious Places (Temple/Trees etc.)	Yes (One temple)		No			
	Hills	No		No			
	River /Streams	(ccvi) No		(ccvii) No			
	Transmission lines	Yes		Yes			
	Others (Petrol Pumps)	No		No			
	Industries and its boundaries	No		No			
	Other Pipelines	Yes (RJIL Pipeline)		Yes (RJIL Pipeline)			
	Cattle crossing Observed	No		No			
25 to 30 km							
	Settlements	(ccviii) Three settlements falling are PeddaGummuluru at Chainage 25000 to 25200, Pallipalem at chainage 27200 and Nakkapalli at 28900 to 30000)		(ccix) Three settlements falling are PeddaGummuluru at Chainage 25000 to 25200, Pallipalem at chainage 27200 and Nakkapalli at 28900 to 30000)			
	Following are observed in the settlements crossing	(ccx) PeddaGummuluru		(ccxi) Pallipalem		(ccxii) Nakkapalli	
		(ccxiii) LHS	(ccxiv) RHS	(ccxv) LHS	(ccxvi) RHS	(ccxvii) LHS	(ccxviii) RHS

S. No.	Attributes along the alignment/ Corridor	LHS		RHS			
	area						
	Huts	(ccxix) Yes	(ccxx) -	(ccxxi) Yes	(ccxxii) Yes	(ccxxiii) Yes	(ccxxiv) Yes
	Shops/Hotels/Eateries	(ccxxv) Yes	(ccxxvi) Yes	(ccxxvii) Yes	(ccxxviii) Yes	(ccxxix) Yes	(ccxxx) Yes
	Structure	(ccxxxi) -	(ccxxxii) -	(ccxxxiii) Yes	(ccxxxiv) Yes	(ccxxxv) Yes	(ccxxxvi) Yes
	Any Other (Compound/Wall etc.)	(ccxxxvii) -	(ccxxxviii) -	(ccxxxix) -	(ccxl) -	(ccxli) Yes	(ccxlii) Yes
2	Number of Trees and its types (Tentative)	(ccxliii) 60 - 70 (ccxliv) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)		(ccxlv) 100 - 120 (ccxlvi) Major tree species consist of *Albizia saman* (Nidraganneru), *Terminalia catappa* (Badam), *Tamarindus Indica* (Chinta), *Borassus flabellifer* (Taadi), Casuarina*equisetifolia* (Sarugudu), *Ficus religiosa* (Raavi), *Ceiba pentandra* (Buruga), Cocos *nucifera* (Kobbari), *Anacardium occidentale* (Jeedimamidi) and *Tectona grandis* (Teak)			
3	Culverts & Bridges	(ccxlvii) 7 Nos.		(ccxlviii) 7 Nos.			
4	Major Junctions	(ccxlix) Yes (NH16 to Narsipatnam Road at chainage 25400) (ccl) NH16 By-pass to Adda Road Village at chainage 25600		(ccli) No			
5	Railway Crossing	No		No			
6	Canal	(cclii) No		(ccliii) No			
7	Reserved Forest	No		No			
8	Avenue Plantation	No		No			

S. No.	Attributes along the alignment/ Corridor	LHS	RHS
	(Social Forestry)		
	Religious Places (Temple/Trees etc.)	Yes (Two Nos.)	No
	Hills	No	No
	River /Streams	No	No
	Transmission lines	Yes	Yes
	Others (Petrol Pumps)	No	Yes
	Industries and its boundaries	Hetro Complex at chainage 27800	No
	Other Pipelines	No	No
	Cattle crossing Observed	No	No
	Box type storm water drainage	Yes (Between chainage 28000 to 30000)	Yes (Between chainage 28000 to 30000)
30 to 38.3 km			
	Settlements	(ccliv) One settlement falling is Nakkapalli at chainage at 30000 to 30100	(cclv) One settlement falling is Nakkapalli at chainage at 30000 to 30100
	Following are observed in the settlements crossing area	(cclvi) Nakkapalli	
		(cclvii) LHS	(cclviii) RHS
	Huts	(cclix) Yes	(cclx) Yes
	Shops/Hotels/Eateries	(cclxi) Yes	(cclxii) Yes
	Structure	(cclxiii) Yes	(cclxiv) Yes
	Any Other (Compound/Wall etc.)	(cclxv) Yes	(cclxvi) Yes
	Number of Trees and its types (Tentative)	(cclxvii) 20 - 25 (cclxviii) Farm Land of Mango and Coconut towards entering of Proposed APRDC Road near	(cclxx) 50 - 60 (cclxxi) Farm Land of Mango and Coconut towards entering of Proposed APRDC Road near Kagita Village (cclxxii) Shrubs

S. No.	Attributes along the alignment/ Corridor	LHS	RHS
		Kagita Village (cclxix) Shrubs	
	Culverts & Bridges	(cclxxiii) 3 Nos.	(cclxxiv) 3 Nos.
	Major Junctions	(cclxxv) Proposed Road Corridor near Kagita to NH16	(cclxxvi) No
	Railway Crossing	No	No
	Canal	No	No
	Reserved Forest	No	No
	Avenue Plantation (Social Forestry)	No	No
	Religious Places (Temple/Trees etc.)	No	No
	Hills	No	No
	River /Streams	(cclxxvii) No	(cclxxviii) No
	Transmission lines	Yes	Yes
	Others (Petrol Pumps)	No	No
	Industries and its boundaries	No	No
	Other Pipelines	No	No
	Cattle crossing Observed	No	No
	Box type storm water drainage	Yes (Between chainage 30000 to 30400)	Yes (Between chainage 30400)

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	
Perform ance 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

Response	Score

[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.

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_____

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

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

(cclxxix) Description of subprojects
(cclxxx) Environmental category of the subprojects
(cclxxxi) Details of site personnel and/or consultants responsible for environmental monitoring
(cclxxxii) Overall project and subproject progress and status

No.	Subproject Name	Status of Subproject				List of Works	Progress of Works
		Design	Pre-construction	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 ANDMONITORING 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:

(cclxxxiii) What are the dust suppression techniques followed for site, and if any dust was noted to escape the site boundaries;

(cclxxxiv) If muddy water was escaping site boundaries, or muddy tracks were seen on adjacent roads;

(cclxxxv) 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;

(cclxxxvi) Are there designated areas for concrete works and refueling;

(cclxxxvii) Are there spill kits on site, and if there are site procedure for handling emergencies;

(cclxxxviii) Is there any chemical stored on site and what is the storage condition;

(cclxxxix) Are there any dewatering activities, if yes, where is the water being discharged;

(ccxc) How are the stockpiles being managed;

(ccxci) How are solid and liquid waste being handled on-site;

(ccxcii) Review of the complaint management system; and

(ccxciii) Checking if there are any activities being undertaken outside of working hours, and how that is being managed.

(ccxciv)

Summary Monitoring Table

Impacts (List fromIEE)	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 ofContract 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)

(ccxcv) Brief discussion on the basis for monitoring
(ccxcvi) Indicate type and location of environmental parameters to be monitored
(ccxcvii) Indicate the method of monitoring and equipment to be used
(ccxcviii) 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)		
			PM_{10} µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM_{10} µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3

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
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**

Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			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	LA_{eq} (dBA) (Government Standard)	
			Daytime	Nighttime

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Monitoring Results)	
			Daytime	Nighttime

V SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

Summary of follow up time-bound actions to be taken within a set timeframe.

APPENDIXES

(ccxcix) Photos
(ccc) Summary of consultations
(ccci) Copies of environmental clearances and permits
(cccii) Sample of environmental site inspection report
(ccciii) 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
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** *		Male * Female	**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 materialunloading, Dustsuspension during site preparation, constructionand trenching Emissionsfrom 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 Sulphur					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
Operation Stage Site Specific Environmental Management Plan							
Fugitive and Stack emissions	Member industry shall use all available air pollution control measures such as Point-of-use (POU) systems that are relatively small and typically	All parameters as per the National Ambient Air Quality	All work site	APIIC/ Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually

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
	dedicated to a single process tool. These systems can remove up to 99.99 percent of effluent gases Periodical Monitoring of pollutants at stacks (Scrubbing system attached to the stack)	Parameters					
Traffic addition	Speed of the trucks shall be controlled by providing speed breakers, sign boards and other appropriate speed control techniques Proper lighting, signboards shall be provided at required locations. Geometrics of the existing roads shall be improved at wherever required (sharp curves, junctions, etc.). Internal roads are planned with sufficient Lane Adequacy Sufficient parking facility shall be provided Use of PUC certified vehicles	Public concerns related to traffic movement	All work site	APIIC/ Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually
Increased noise levels due to operation of utilities and services, industries equipment, and Vehicular movement	Acoustic Barriers and Enclosures All transportation vehicles, machinery will be periodically checked to ensure minimal noise	Day and night time noise level	All work site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually

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
	generation to comply OHSAS and ambient noise standards in the surrounding area Personal Protecting Equipment (PPE) Greenbelt Development Counselling and traffic regulation						
Temporary perplexity Health implication on working continuously in vibrating environment	Machine and equipment likely to generate vibration shall be fixed based on the detail designing of foundation. Machinery equipped with latest vibration-reduction technology shall minimize the vibrations. Vibration dampers shall be provided around the source of generation	Availability of PPE and other occupational safety measures	All project site	APIIC / Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually
Impact on existing water resources	Total water requirement will be sourced from municipal and industrial water supply. Mitigations measures to include the following: @ Rain water harvesting. @ Recycle and Re-use of water for horticulture	Physical, chemical and biological parameters of existing water resources	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually
Impact due to disposal of solid waste on ground without treatment	MSW will be given to municipal solid waste handler.	Solid waste management plan and its implementation	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to

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
							inspect annually
Impact due to untreated discharges	No untreated WW will be sent out Storm Water Drainage System	Physical and chemical parameters of downstream water Public consultation with downstream community	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually
Human life and loss of property	Hazardous materials will be stored as per the prescribed/approved safety norms. Temporary storage of hazardous waste within the industry premises for a period of 30 days. Hazardous wastes will be sent through APPCB approved vendors. Medical facilities including first aid will be available for attending to injured workers Emergency alarms, provision of fire hydrant system and fire station. Effective Disaster Management Plan (DMP) which covers onsite and offsite emergency plans. Recovery of spills to the	Hazardous material management plan and its implementation	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually

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
	extent possible						
Socio-economic conditions of the region	During operational phase, the APIIC and inhouse facilities are likely to generate direct and indirect employment. There is wide variety of jobs that are generated in form of indirect employment (e.g., hotel business, small eateries, construction, transport, etc.). Local people will be given preference based on their qualification and skill set.	Socio economic parameters and public consultation with local community	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually
Natural Hazards	As given in Emergency Preparedness Plan / Disaster Management Plan (DMP) prepared; Site Main controller will act as the overall in-charge of the control of educative, protective and rehabilitation activities to ensure least damage to life and property.	Availability of emergency preparedness plan	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually
Induced Development	Offers an efficient and cost-effective supply chain/ value proposition to the local importers and exporters.	Any development other than master plan items	All project site	APIIC /Operator	Site inspection and documents checking	Contractor / APIIC / PMU/PMSC	Contractor to Monitor regularly APIIC to inspect monthly PMSC/ PMU to inspect annually

Appendix 22: 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 23: TOR Issued by MOEFCC for Environmental Clearance of Nakkapalli Industrial Park

F. No. 21-140/2018-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: 12th June, 2019

To

The Chief Engineer (North)
Andhra Pradesh Industrial Infrastructure Corporation Limited
Parisrama Bhavan, 6th Floor, 5-9-58/B
Fateh Maidan Road, Basheerbagh
Hyderabad- 500 004

Sub: Development of Industrial Park near Nakkapalli Village, Nakkapalli Mandal, Visakhapatnam District over an area of 1577.87 ha by M/s Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited - **Terms of Reference.**

Sir,

This has reference to your letter no. GM/EMP/APIIC/IP-Nakkapalli/EC/2017 dated 6th November, 2018, submitting above mentioned proposal online on 30th November, 2018 and subsequent clarifications vide letter dated 7th December, 2018 and 6th March, 2019, 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 near Nakkapalli Village, Nakkapalli Mandal, Visakhapatnam District over an area of 1577.87 ha by M/s Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited' was considered by the Expert Appraisal Committee (EAC) for Industrial Estate/Area, SEZ and Highways projects in its 204th meeting held on 17th December, 2018, 211th meeting held on 27th March, 2019 and 215th meeting held on 20th May, 2019, in the Ministry of Environment, Forest and Climate Change, New Delhi.

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

(i) The proposal is for development of Industrial park near Nakkapalli Village, Nakkapalli Mandal, Visakhapatnam District over an area of 1577.87 ha by M/s Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited.

[Proposal No. IA/AP/NCP/**84879**/2018]

(ii) **Location:** Project site is falling in Butchirajupeta, D L Puram, Vempadu, Chandanada, Rajayyapeta villages in Nakkapalli Mandal of Visakhapatnam district in Andhra Pradesh.

(iii) **Land use of the site and around the site up to 10 km radius:**

The land use breakup of project site is given below:

S. No.	Classes	Area (Ha)	% of Area
1	Agriculture Plantation	742.30	47.04%
2	Crop land	130.43	8.27%
3	Aquaculture/Pisciculture	102.66	6.51%
4	Builtup (Rural)	46.17	2.93%
5	Scrub land Dense	230.08	14.58%
6	Scrub land Open	191.89	12.16%
7	Sandy areas	44.66	2.83%
8	Lakes/Ponds	45.48	2.88%
9	Reservoir/Tanks	13.56	0.86%
10	River/Stream/Drain	30.64	1.94%
Total		1577.87	100.00%

The existing landuse of study area i.e., 10 km radius from project site is given below:

S. No.	Classes	Area (Ha)	% of Area
1	Agriculture Plantation	13662.02	24.56%
2	Crop land	10683.24	19.21%
3	Aquaculture/Pisciculture	396.46	0.71%
4	Builtup (Rural)	991.98	1.78%
5	Transportation	151.29	0.27%
6	Mining/Industrial	261.47	0.47%
7	Forest Plantation	367.34	0.66%
8	Forest-Dense	1631.23	2.93%
9	Gullied/Ravenous	9.66	0.02%
10	Scrub land Dense	231.33	0.42%
11	Scrub land Open	1992.83	3.58%
12	Sandy areas	400.72	0.72%
13	Salt Affected	3.42	0.01%
14	Lakes/Ponds	172.19	0.31%
15	Reservoir/Tanks	1028.91	1.85%
16	River/Stream/Drain	227.01	0.41%

17	Canal	156.42	0.28%
18	Sea (Bay of Bengal)	23250.82	41.80%
Total		55618.32	100%

(Statistics as generated from LU/LC data of NRSC-Bhuvan: Cycle-2 [2011-12])

(iv) **Total water requirement and its source:** Total water demand for the proposed INDUSTRIAL PARK is 18.87 MLD but considering the reuse of 540 KLD of treated sewage from the STP, the net fresh water demand is 18.4 MLD and 700 KL of fire water demand.

The water will be sourced from the Yeleru Left Main Canal (YLMC) in line with the existing industrial water supply policy of the State located at 35 km.

(v) **Municipal solid waste generated disposal facility:** Total municipal solid waste generation is estimated at 18.5 TPD which include biodegradable and Non–biodegradable/Recyclable waste) and 79.5 TPD of Industrial Waste (hazardous, non-hazardous and recyclable waste).

The industrial solid waste generated daily shall be collected via trucks and transported to the landfill site. A TSDF is being proposed to be developed by M/S APIIC LIMITED for common utilisation of industrial parks developed and under development in Visakhapatnam region. This TSDF will serve requirement of Nakkapalli Industrial Park and until it is operational, it is proposed to use JNU Pharma city TSDF. Industries shall follow Hazardous and Other Waste (Management and Transboundary Movement) and amendment thereof, 2016.

(vi) **Waste water generation, treatment and disposal:**

- Estimated effluent generation: ~8.575 MLD
- Estimated sewage generation: ~0.998 MLD

The treated wastewater will be disposed into sea through marine outfall facility. CETP will be developed on modular basis based on industrial wastewater generation. The sewage from residential areas will be treated in STP of 675 KLD capacity which will be developed on modular basis. Treated sewage will be reused for greenbelt and toilet flushing etc.

(vii) **CETP:**

Type of effluent, Quantity, effluent conveyance system from the member units to CETP	Industries willing to have own treatment facilities for effluent and sewage shall be developed by the industry in their premises. • Estimated effluent generation: ~8.575 MLD • Estimated sewage generation: ~0.998 MLD
Treatment and usage of treated sewage	If industry would like to utilise common treatment facilities, effluent of ~8.575 MLD and sewage of ~0.998 MLD

	generated in the industrial area will be combinedly treated in proposed CETP of 9.6 MLD capacity. The treated wastewater will be disposed into sea through marine outfall facility. CETP will be developed on modular basis based on industrial wastewater generation. The sewage from residential areas will be treated in STP of 675 KLD capacity which will be developed on modular basis. Treated sewage will be reused for greenbelt and toilet flushing etc

(viii) **Rain Water Harvesting:** Nakkapalli Industrial Park is planned with water recycling, waste management, rainwater harvesting, use of non-renewable energy like solar powered street lights, etc. for efficient use of resources.

(ix) **Water bodies, diversion if any:** There is a backwater/stream flowing within the site and a buffer of 100 m or width of the creek as per CRZ regulation is proposed and green areas will be developed in the buffer area. Major part of the stream is less than 100m width. As the stream width reduces, buffer equal to the width of the stream is proposed.

Adequate landscaped green spaces/buffers will be provided near water bodies.

(x) **Tree cutting, types, numbers, girth size etc.:** The site is comprised of agriculture plantation, aquaculture, scrubland, dense scrub land on hills, water bodies and settlements are located within the site. The following are the type of trees within site. Clearance of these trees is envisaged.

Scientific Name	**Local Name**
Borassus flabellifer	Thaadi
Cocos nucifera	Kobbari
Wrightia tinctoria	Ankudu
Annona squamosa	Seethaphal
Anacardium occidentale	Jeedimamidi
Acacia auriculiformis	Australia Tumma
Eucalyptus globulus	Neelagirichettu
Phoenix sylvestris	Eetha
Casuarina equisetifolia	Sarugudu
Mangifera indica	Mango

(xi) **If the project involves diversion of forest land, extend of the forest land:** No forest area is involved.

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(xii) **Rehabilitation involved, if any:** About 1577.87 ha of land was identified at Butchirajupeta, D.L. Puram, Vempadu, Chandanada, Rajayyapeta villages in Nakkapalli Mandal. The following is the list of villages falling in Nakkapalli project site.

Villages	Settlements
Butchirajupeta	• Buchchirajupeta • Nallamattipalem • KothaChandanada
DonivaniLakshmipuram	• Vadapeta
Vempadu	• Mulapara
Chandanada	• Chandanada • Patimida • Tammayyapeta
Rajayyapeta	• Rajayyapeta • Boyapadu

These villages contain some settlements. No resettlement will be taken up to the existing settlements, however, scattered dwellings will be relocated into the residential area proposed. An adequate green buffer and access roads to road network will be provided to the existing settlements which are falling in the project site.

(xiii) **Terrain, level with respect to MSL, requirement of filling, if any:** The existing terrain of the entire project site is relatively flat and gentle. Existing ground elevation is ranging from 0m to 126 m.

Mostly Cut and fill quantities will be managed within in the site. However, excess fill materials if any will be sourced from approved quarry and details will be provided in the EIA report.

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

(xv) **National Park/ Wild Life Sanctuary in 10 km radius area:** Not Applicable.

(xvi) **Whether the proposal involves approval/clearance under the C.R.Z notification, 2011:** Yes, CRZ area is 224.54 acres (5.76% of total area). There is a backwater/stream flowing within the site and a buffer of 100 m or width of the creek as per CRZ regulation is proposed and green areas will be developed in the buffer area.

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(xvii) **If the project falls within 10 km of eco- sensitive area, Name of eco-sensitive area and distance from the project site:** Not Applicable.

(xviii) **Investment/Cost of the project:** INR 1191 Crore.

(xix) **Employment potential:** Direct employment of about 30,800 and 2.5 times of direct employment as indirect employment will be generated during construction and during operation phases respectively, thereby opening up employment opportunities for the youth in the catchment region.

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

- The total estimated manufacturing industry output in 25 years after the complete industrial plotted land is absorbed and all the industrial units commence production, is about Rs. 1 lakh Crores.
- Proposed Park is likely to generate direct and indirect employment potential of about 30,800 respectively, thereby opening up employment opportunities for the youth in the catchment region.
- Employment opportunities to the local people for skilled, semi-skilled and unskilled work force during the construction and operation phases
- As a part of the Corporate Social Responsibility (CSR) initiatives, it is envisaged to create better and quality Education, Health, Hygiene and Sanitation, Empowerment and Livelihoods and Community Development Initiatives.
- The proposed project shall further act as a catalyst to industrialization and urbanization of the region.
- There will be improvement in living standards. General welfare will improve in the area as per capita income will go up in the post project period.
- Overall economic growth of Visakhapatnam District, in particular and State of Andhra Pradesh and Nation in general.
- 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.,

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

(xxii) The industries to be housed within the proposed Industrial Area include the Pharmaceuticals, Chemicals and Petrochemicals, Industrial and Consumer Electronics, Auto and Auto components, Aerospace and defence, Light and heavy Engineering, CRZ permissible hazardous material storages, Building Materials Industry/Non Metallic minerals, MSME, Plastics, Food and Agro Processing Industry, Textile and Apparel manufacturing.

(xxiii) The area coverage of the pharma and chemical units is reduced from 20% to 11.5% of proposed industrial area.

(xxiv) Green buffer of 50 m is provided all around settlements.

(xxv) The pharma and chemical units will be located 500 m away from the settlements. Non-pharma and chemical units will be located between the 50 m buffer and 500 m distance.

(xxvi) Green belt is 18% of proposed industrial area. Rest of the green cover shall be developed by the individual industries.

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 to the said project. As per the recommendation of the EAC, the Ministry of Environment, Forest and Climate Change hereby accords TOR for '**Development of Industrial Park near Nakkapalli Village, Nakkapalli Mandal, Visakhapatnam District over an area of 1577.87 ha by M/s Andhra Pradesh Industrial Infrastructure Corporation (APIIC) Limited**' and for preparation of EIA/EMP report with public consultations subject to compliance of all conditions as notified in the standard ToR applicable for highways and specific conditions, as mentioned below.

A. Project Specific Conditions:

(i) The PP has to apply for CRZ Clearance also, as per provisions contained in the CRZ Notification 2019.

(ii) No disturbance to the creek area. The creek areas are to be protected. Pharma and Petro-chemical industries adjacent to the creek shall be relocated.

(iii) Industries/activities permitted in area between sea and creek are as under:

Sector	Anticipated Types of Industrial/Activities
Industrial and Consumer Electronics	– Medical equipment, defense electronics, control equipment. – Solar panels and module. – Communication Equipment. – Consumer Electronics – Electronic Components – Industrial Electronics
Auto components	– Assembly of auto components & ware housing
Packaging	– Plastic packaging, wood/paper packaging etc.

(iv) Proponent shall prepare the Zoning Atlas so that the polluting industries including Pharma/Chemical units are not scattered all over the region.

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(v) Proponent to indicate the details of type of Pharma and Petro-chemical industries proposed to be setup. Clustering of Pharma and Petro-chemical industries for separate CETP to be worked out.

(vi) Non-pharma, non-chemical and non-Petro-chemical industries shall be established between 50 m and 500 m from the settlements.

(vii) Industries/activities permitted within distances of 50m-250m, 250m-500m and beyond 500m from settlements are as under:

Industries proposed within 50m–250m from settlement (orange, green and white category)	**Industries proposed within 250m–500m from settlement (red category)**	**Industries proposed within Beyond 500m from settlement (red category)**
- Industrial and consumer electronics - Auto components - Aero space and defense – R&D - Aero engine components, communication devices - MSME (Leather Products such as Sports goods excluding tanning and hide processing Plastic products for Packaging, automobile, consumer durables, healthcare by injection, low Moulding, Extrusion, Timber/Wood Products such as Furniture, Sports goods, Wood Flooring)	- Engineering (light and heavy engineering) - Building Materials Industry/Non Metalic minerals (processed minerals, Clay building products, bricks, AAC Blocks, Kerbs Stones) - Food and Agro Processing Industry - Automobile manufacturing - Aerospace and defense	- Pharmaceuticals - Chemical - Petrochemical - Tiles, Ceramics and refractories, glass and glassware, graphite, marbles

(viii) The planned Pharma, Chemical and Petro-chemical units shall not exceed 11.5% of total industrial area as proposed.

(ix) All existing waterbodies should be protected.

(x) No extraction of the groundwater shall be undertaken. Water allocation letter to be submitted for use of surface water from Yeleru Left Main Canal (YLMC).

(xi) Proponent shall establish an Environmental Cell specifically for the proposed industrial Park.

(xii) The proposed TSDF facility shall be used for captive purposes only.

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(xiii) The activities and budget earmarked for Corporate Environmental Responsibility (CER) shall be as per ministry's O.M No 22-65/2017-IA.II (M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP Report.

(xiv) The Action Plan on the compliance of the recommendations of the CAG as per Ministry's Circular No. J-11013/71/2016-IA.I (M), dated 25.10.2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP Report.

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.

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(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.

(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.

(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.

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(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

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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.

13/6/2019

(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

13/6/2019

(Raghu Kumar Kodali)
Director/Scientist F

Appendix 24: APIIC Note on CETP for Tranche-2

Andhra Pradesh
Industrial Infrastructure Corporation Ltd.,
(Govt. of Andhra Pradesh Undertaking)

APIIC
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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
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