



Karaikal Port Private Limited (KPPL)

**Comprehensive EIA for Master Plan of Karaikal Port,
Thirumalairayan Pattinam Commune Panchayat,
Keezha Vanjore village, Karaikal district, Puducherry.**

Executive Summary

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Submitted by

QCI-NABET Accredited EIA Consultant



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1 Introduction

The importance of ports and its related infrastructure plays a vital role in the growth of a nation and its economy. Indian Ports sector plays a crucial role in increasing the country's Gross Domestic Product 1 (GDP). About 95% by volume and 70% by value of the country's international trade is carried on through maritime transport. The transportation sector plays a key role in economic growth, regional development, and connecting India to global markets. India has a long history of sea trade, and ports are vital for coastal economies and inland industries. They serve as important links between land and sea transport, making the movement of goods more efficient. Seaway transport is the most cost-effective method for carrying large loads, which is why many industries are located near major ports to export products and import raw materials. These industries also support local employment and communities. Puducherry has a 290 sq km coastline and having three minor ports at Pondicherry, Karaikal, and Mahe.

Karaikal Port is an all-weather deep-water port developed in an area of ~600 acres and commissioned in April 2009. The Karaikal Port is located south-east of Vanjore village and falls in the Thirumalairayan Pattinam Commune Panchayat of Karaikal district in Puducherry Union Territory. The port, commissioned in April 2009 on a Build-Operate-Transfer (BOT) basis, is designed to handle various multipurpose cargo. Karaikal Port currently has the capacity to handle 21.50 million Metric Tons Per Annum (MTPA) of various cargoes. It serves as a gateway port for existing and planned projects in the hinterland of Karaikal and Nagapattinam district.

To meet the growing demand and diversify its operations, Karaikal Port is considering expanding its facilities as Master Plan development which includes handling of all type of cargo and infrastructure facilities for handling & storage of the cargo.

2 Project Site

The Karaikal Port is located south-east of Vanjore village and falls in the Thirumalairayan Pattinam Commune Panchayat of Karaikal district in Puducherry Union Territory. In order to accommodate the master plan development, KPPL requested Government of Puducherry for extension of port limits. The chief secretariat (port), Government of Puducherry has issued G.O. Ms.No.03 dated August 1, 2024.

Existing port is in an area of 243 ha along with 6.07 ha of railway corridor which is completely in possession of KPPL. Additionally, an area of 249.21 ha is required for the master plan is based on consideration of all the facilities essential for envisaged operations such as material handling area, cargo storage/backup area, operational and utility area, internal connectivity, drainage, greenbelt and buildings etc., and by focusing on possibility of limiting the extent of land area requirement. Out of 249.21 ha, an area of 137.14 ha will be reclaimed land and remaining land of 112.07 ha will be acquired which belongs Private, Government, HR & CE (Government)/Panchayat parties.

3 Project Description

3.1 Need for Master Plan Development

To meet the growing demand and align with Maritime India Vision (MIV) 2030, KPPL proposes a Master Plan development to enhance the port's capacity and infrastructure. The expansion will increase handling capacity from 21.5 MMTPA to 100.3 MMTPA through augmentation of existing facilities and creation of new berths, breakwaters, storage, utilities, and support infrastructure.

3.2 Cargo Handling Capacity

The Master Plan is designed to handle a total cargo capacity of 100.3 million metric tonnes per annum (MMTPA) with **59.3 MMTPA** allocated for multipurpose and liquid cargo, and **41.0 MMTPA** designated for gas-related commodities such as cryogenics, LNG, and LPG etc.

Table 3-1: Cargo Handling Capacity (Cumulative) for Master Plan

Bulk Cargo (59.3 MMTPA)		Liquid Cargo (41 MMTPA)	
Dry Bulk	Break bulk/General cargo	Liquids	Gas /Cryogenics/ Liquid
Coal	Textile	All Class A, B, C chemical products, excluded petroleum products (Liquids which have flashpoint of 93°C and above), Petrochemical products, Hazardous, Toxic and Non-Hazardous chemicals/Liquids. Ethylene, Propylene (Propene), Butadiene, Pentane, Ethyl Mercaptan Motor Spirit, Propylene Oxide, Hexane, Naphtha, Acetone, Methyl Chloride / Chloro Methane, Cyclohexane, Benzene, Ethyl Acetate, Acrylonitrile Acetonitrile, Methyl Methacrylate, Methacrylonitrile, Methanol (Methyl Alcohol), Isopropyl Alcohol, Ethyl Alcohol (Ethanol), Ethylene di chloride, Methyl Isobutyl Ketone, Ethyl Benzene, N-Butyl Acetate, Isobutyl Alcohol (Iso Butanol), N-Butyl Alcohol (N-Butanol), Epichlorohydrine, Styrene, O-Xylene, Acetic Acid, Acetic Anhydride, Nonedible/ Mentha Oil Low Sulphur Heavy Stock/ Furnace oil, Aniline, Methyl Ethyl Ketone Peroxide, Ethyl Hexanol-2, Vinyl Chloride, Phenol, Naphthalene, Ethylene Glycol, Mono Ethylene Glycol, Toluene 2,4 -di isocyanate. Edible oil, Non-Hazardous chemicals/Liquids and other Liquid cargos.	LNG, Propane, Butane, n-Butane, Ethane, LPG, CNG, NG and others.
Iron ore	Machinery		
Limestone	Timber		
Clay	Steel		
Fertilisers	Containers		
Gypsum	Granite		
Dolomite	Marble slabs		
Aggregates	Fertiliser in bags		
Agro products such as corn, wheat, sugar, red chillies, wood chips, food grains	Agro products such as corn, wheat, sugar, red chillies, food grains etc., in bags		
Clinker	Wood chips		
Cement in bulk	Cement in bags		
Sand	Salt		
Minerals	Raw materials for manufacture of fertilizer		
	Ro-Ro and Automobiles		
	Project cargo		

3.3 Proposed Development Plan

The proposed Master Plan of Karaikal Port envisages the following developments:

- Cargo Handling Capacity enhancement from existing 21.5 MMTPA to 100.3 MMTPA.
- Total Berths - 14 (including existing 5 berths), SPM, sub-sea pipeline, port crafts etc.
- Extension of breakwaters
- Proposed Master Plan also accommodate backup facilities, waste reception facilities, drainage, water supply, electrical works, internal roads, railway works and other utilities, amenities and bunkering considering the future business potential.
- KPPL also envisages developing the Desalination Plant with a capacity of 50 MLD on modular basis to meet the freshwater demand to the consumers within the port.
- The Puravadaianar river /creek is proposed to be realigned along with diversion of its path by 1.30 km towards north of the project boundary.

3.4 Salient Features of the Master Plan Development

The proposed Master Plan development of Karaikal Port is tabulated in **Table 3-2**.

Table 3-2: Salient Features of Master Plan Development

S.No	Description	Unit	Existing	Proposed/ Additional	Total	Remarks
1.	Berths	Number	5	9	14	2 out of 5 Existing Berth Need modification to cater bigger vessel.
2.	North breakwater	Meter	1180	3046	4226	Some portion of existing breakwater need to be dismantled, and extension will be taken which includes rock bund construction
3.	South breakwater	Meter	1115	1600	2715	Extension of breakwater and rock bund construction will be taken place.
4.	Approach channel	Metre	L:9750 W: 160 D:-15.5 m CD	L:2750 W:100 D: -5.5 m CD	L:12500 W:260 D: -21 m CD	Increase in length, width and depth
5.	Diaphragm Wall	Meter	0	227	227	--

S.No	Description	Unit	Existing	Proposed/ Additional	Total	Remarks
6.	Cargo handling capacity	MMTPA	21.5	78.8	100.3	Total 100.3 MMTPA
7.	Port Backup area & associated facilities	Ha	243.0	249.2	492.21*	Railway corridor- 6.07 ha.
						Reclamation Required 137.14 ha.
						Land To be Acquired is 112.07 ha.
8.	Capital Dredging	M. Cum	0	42	42	Channel, Berth pocket & Turning circle will be deepened.
9.	Maintenance Dredging	M. Cum	1.5	2.7	4.2	-
10.	Reclamation	M. Cum	0	16	16	Development of backup area
11.	Reclamation area	Ha	0	137.14	137.14	Reclamation required for 137.14 Ha.
12.	Water requirement	MLD	0.55	10.00	10.55	Source: - Existing 350 KLD approval from PASIC. - Existing 200 KLD RO plant. - Proposed desalination plant with a capacity of 50 MLD on modular basis to meet the freshwater demand.
13.	Power	MVA	4.0	10.0	14.0	66 KV grid power supply is being drawn from electricity board.

S.No	Description	Unit	Existing	Proposed/ Additional	Total	Remarks
						Backup power through DG sets to the tune of 1.5 to 2.0 MVA will be provided.
14.	Effluent Treatment Plant	KLD	182	134	316	Currently ETPs of 182 KLD (2x50 KLD storm water treatment + 50 KLD coal yard run off treatment + 16 KLD vehicle wash treatment + 16 KLD tyre wash treatment) have been installed and in operation.
15.	Sewage Treatment Plant	KLD	25	30	55	Currently STP of 25 KLD has been installed and in operation.

3.5 Proposed Land Use

The proposed development will consist of material handling area, cargo storage/backup area, operational and utility area, internal connectivity, drainage, greenbelt and buildings etc. The proposed land use for master plan development of Karaikal port is given below.

Table 3-3: Land use Break up for Master Plan

S. No.	Item	Area in Ha.
1	Multipurpose back up area	117.07
2	Existing Multipurpose backup	55.99
3	Multi Liquid, Gas, Cryogenic cargo	91.55
4	In bound Parking	15.2
5	Outbound parking	6.23
6	Green belt	18.28
7	Others (roads, rail, Buildings + Workshops, Misc. (Open storage + recreation facilities + etc.) Desalination Plant + ETP + STP)	187.89
	Total	492.21

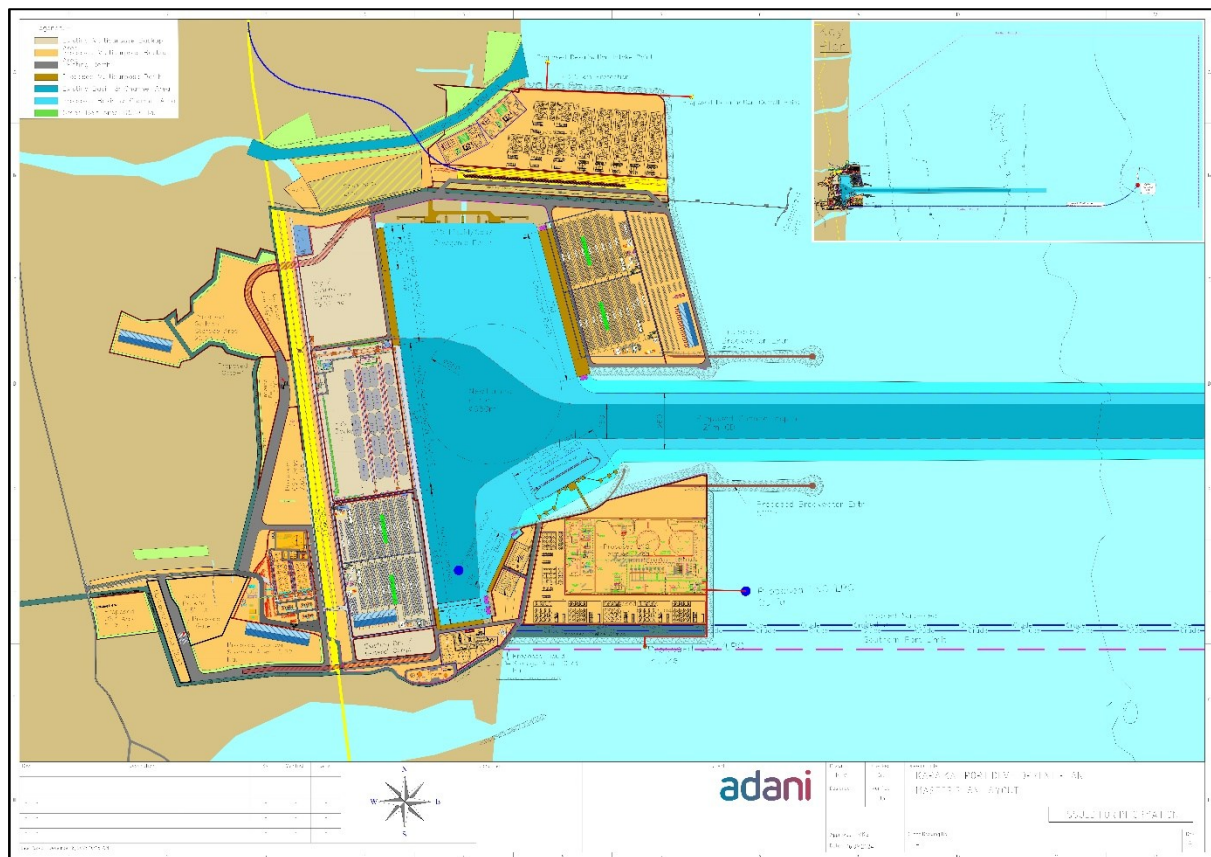


Figure 3-1: Proposed Karaikal port master plan layout

3.6 Project Cost

The estimated project cost aligned with the proposed Master Plan is **₹19,743.88 crore**.

4 Description of Environment

An area covering 10 km radius for Primary baseline environmental survey and 15 km for secondary data collection from Karaikal Master Plan boundary has been earmarked as study area. The baseline environmental surveys covering terrestrial and marine environment were carried out during three seasons i.e., Winter season(W)-January to March, 2025; Summer Season(S)-April to June, 2025; Pre-monsoon Season (PM)-July to September, 2025 in the study area and sampling locations are shown in **Figure 4-1**.

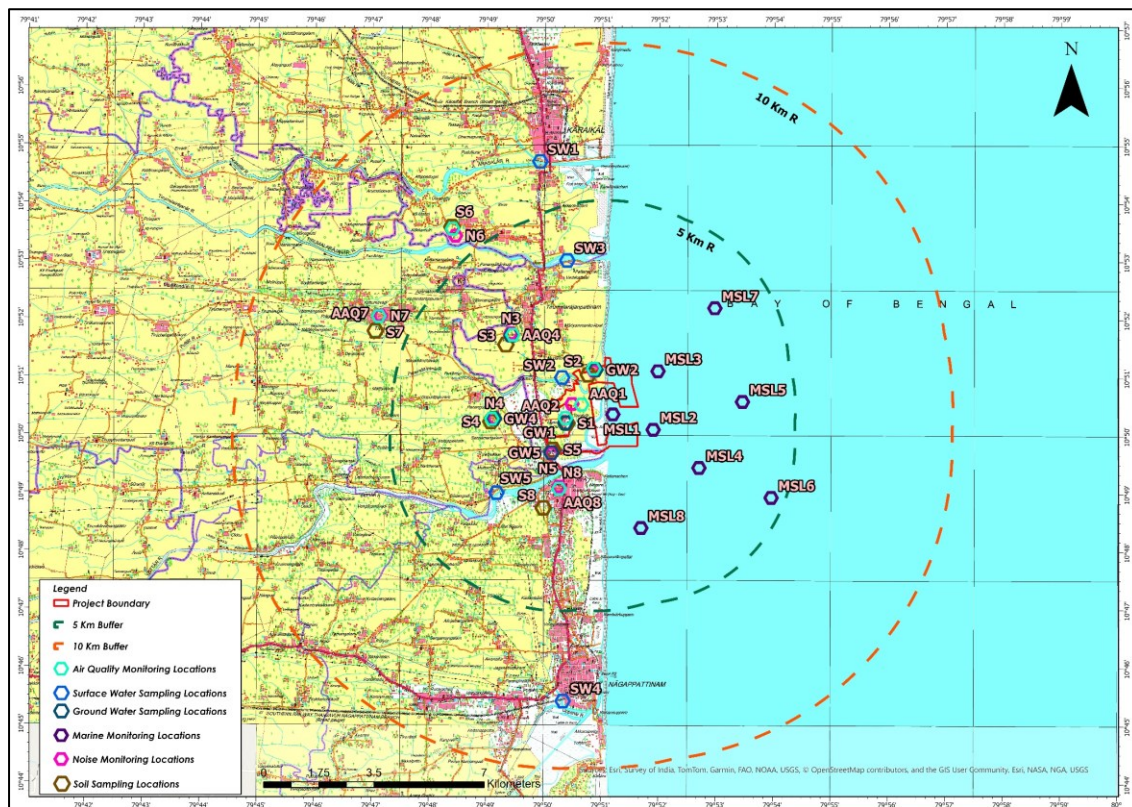


Figure 4-1: Study Area and Sampling Locations

4.1 Terrestrial Environment

4.1.1 Ambient Air Quality

Ambient air quality in the study area was assessed at eight monitoring locations during the study period. A total of 12 parameters were monitored in line with the National Ambient Air Quality Standards (NAAQS) including Particulate Matter (PM₁₀ and PM_{2.5}), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO), Ozone (O₃), Lead (Pb), Ammonia (NH₃), Benzene (C₆H₆), Benzo(a)Pyrene (BaP – particulate phase only), Arsenic (As), Nickel (Ni). All monitoring and analysis activities were conducted using standard procedures prescribed by the Central Pollution Control Board (CPCB). PM₁₀ ranged between 34.9 µg/m³ (Neravy) in summer season to 77.1 µg/m³ (Project Site) in pre-monsoon season. NAAQS stipulated standard for PM₁₀ for 24 hr is 100 µg/m³. PM_{2.5} values varied from 11.0 µg/m³ (Polagam) in winter season to 32.5 µg/m³ (Project Site) in pre-monsoon season. NAAQS stipulated standard for PM_{2.5} for 24 hr is 60 µg/m³. SO₂ varied from 4.0 µg/m³ (Neravy) in pre-monsoon season to 32.1 µg/m³ (project site) in summer season. NAAQS stipulated standard for SO₂ for 24 hr is 80 µg/m³. NO₂ ranged between 7 µg/m³ (Neravy) in pre-monsoon to 38.0 µg/m³ (Vanjore) in winter season. NAAQS stipulated standard for NO₂ for 24 hr is 80 µg/m³. All values were observed to be within NAAQS limits.

4.1.2 Ambient Noise Quality

Baseline ambient noise quality has been established by monitoring noise levels at 8 locations.

- Day equivalent noise levels (L_d) ranged between 51.5 dB(A) to 53.8 dB (A) in Residential areas and 66.3 dB (A) to 67.1 dB (A) in Industrial area.

- Night equivalent noise levels (Ln) ranged between 39.2 dB(A) to 43.6 dB (A) in Residential areas and 53.9 dB (A) to 55.1 dB (A) in Industrial area.

4.1.3 Soil Quality

The study area predominantly features sandy clay loam texture. Soil sampling carried out at 8 locations. pH of the soils ranged between 7.03 (S3-Polagam) in winter and 8.12 (S1-Vanjore) in summer indicating "alkaline" in nature. EC is moderate with 376 $\mu\text{mhos/cm}$ (S6-Neravy) in winter to 1321 $\mu\text{mhos/cm}$ (S4-Panangudi) in summer, Water Holding Capacity is 31.7% (S8-Nagore) in winter to 53.8 % (S2-Vadaku Vanjore) in summer, Heavy Metals such as copper Cu 5 to 223.2 mg/Kg, Iron (as Fe) varied from 2635 to 7523 mg/Kg and Lead (as Pb) is varied from 8.8 to 46 mg/kg. Macro Nutrients Available Nitrogen 69.6 kg/ha (S5-Mela Vanjur) in pre-monsoon to 155.7 kg/ha (S6-Neravy) in summer (relatively low in soils) while Potassium 119 kg/ha (S4) in winter to 273 kg/ha (S5) in summer and Phosphorus 147 kg/ha (S5-Mela Vanjur) in pre-monsoon to 931 kg/ha (S7-Thittacheri) summer.

4.1.4 Inland Water Quality

Groundwater samples were analysed at five locations. The pH ranged from 7.44 at GW-2 (vadaku vanjore) in summer season and 8.65 at GW 3 (Polagam) in winter season indicating slightly alkaline in nature. Total Dissolved Solids (TDS) were observed between 809 mg/l at GW-4 (Panangudi) in winter season and 1904 mg/l at GW-2 (Vadaku vanjore) in winter season. Key parameters including chlorides, sodium, potassium, fluoride, and nitrate were found to be within permissible limits, while heavy metals and cyanides were below acceptable limits. **Surface water quality** was assessed at five locations. The pH is varied between 7.12 (SW-4-Nagapattinam) in summer season to 7.86 (SW-1-Karaikal) in winter season indicating Neutral in nature, other parameters such as alkalinity, macronutrients (NPK), fluoride, coliforms, and heavy metals and cyanides were found to be within acceptable limits.

4.2 Marine Environment

The marine environmental conditions around Karaikal were studied through water and sediment sampling at ten locations. Surface water temperatures ranged from 29.1°C to 32.1°C, while bottom layers were slightly cooler at 28.2°C to 30.4°C. pH levels across all depths were alkaline, ranging from 7.98 to 8.3. Salinity varied between 29 – 33.5 PSU at the surface and 29.5 – 33.8 PSU at the bottom. Turbidity and total suspended solids were little higher at the bottom, at some locations. TDS concentrations were high, ranging from 28,800 to 33790 mg/l. Dissolved Oxygen (DO) was adequate at the surface (4.9 – 6.9 mg/l) but lower at depth (2.6 – 6.87 mg/l), while BOD and COD values were higher in bottom layers. Nutrient levels such as total nitrogen, sulphates, nitrates, nitrites, ammonia, and reactive silicates showed moderate to elevated concentrations, with slightly higher values at depth. Major ions like chlorides, sodium, and potassium were consistently high across all samples. Heavy metals including lead, mercury, and selenium were below

detection limits, while cadmium, copper, zinc, iron, arsenic, and chromium were present in low to moderate concentrations, with bottom layers generally showing higher values. Sediment analysis showed that silt was dominant at most stations (>80%). 32 phytoplankton species, 44 zooplankton species, 33 macro-benthic species, and 41 meiobenthic species are recorded.

4.3 Coastal Regulation Zone

Physical demarcation of HTL, LTL and delineation of CRZ boundaries for the project site were carried out by Council of Scientific and Industrial Research - National Institute of Oceanography (CSIR-NIO), Goa, R.C Visakhapatnam which is one of the MoEF&CC authorized agencies. Project site does not contain environmentally sensitive areas such as National parks / marine parks, sanctuaries, wildlife habitats, corals / coral reefs. Facilities proposed such as breakwaters, berths, reclamation area, cargo handling and storage facilities and river/creek rerouting are falling in CRZ IB, CRZ III, CRZ IVA and CRZ IVB. The activities proposed within CRZ area are permissible as per CRZ notification, 2011.

4.4 Socio-Economic conditions

In the study area of 15 km radius, 118 villages in two taluk of Karaikal and two taluks of Nagapattinam district of Puducherry and Tamil Nadu.

- The census study has been carried out for the 15 Km Radius, there are 1,29,624 households, and population is 5,17,140 out of which male population is 49.24% and female population is 50.76%. The sex ratio of the study area is 1031 females over 1000 males. In the in 5-10 Km Radius, sex ratio was recorded as highest and in 0-5 Km Radius it was noticed as least.
- The literate population in the study area is 3,69,029 which constitute to be 76.58% of the total population. The total percentage of male literate population is 52.26% and total female percentage of literate population is 47.74%. Sex ratio of the Literacy population is 913 females over 1000 males.
- The Working population in the project study area is 1,94,698 which are around 37.65% and non-working population in the 3,22,442 which are 62.35%. Working ratio of study area is very less and this should be raised by providing opportunities and skill development programs to the educated and non-educated of locales. The highest working population is in 5 to 10Km Radius area and least in 1-5 Km Radius.
- In the project study area fishermen households are 8889, and population is 32,632 from 15 villages of two Taluk from Karaikal, Nagapattinam district

5 Anticipated Environmental and Social Impacts with Mitigation Measures

The proposed Karaikal Port expansion may cause environmental and social impacts during construction and operation. These impacts have been identified, and suitable mitigation measures are planned.

5.1 Land Environment

The total area including master plan development is 492.21 ha includes existing port area of 243 ha along with 6.07 ha of railway corridor. Out of remaining land of 249.21 ha, an area of 137.14 ha will be reclaimed, and remaining land of 112.07 ha will be acquired which belongs Private, Government, HR & CE (Government)/Panchayat parties. **Potential impacts** include spillage of construction materials and contamination from industrial waste during operations. However, such impacts can be prevented by adopting appropriate mitigation measures which are described below.

Mitigation Measures:

- Land use changes will follow the approved Master Plan within revised port limits.
- Waste will be safely stored, segregated, and transported using trained personnel and compliant vehicles.

5.2 Marine Environment

Activities like dredging, berth construction, Single Point Mooring (SPM), Sub-sea pipeline and breakwater extension may disturb marine habitats. Pipeline laying and cargo operations may also affect marine life. However, such disturbance can be prevented by adopting appropriate mitigation measures which are described below.

Mitigation Measures:

- Limit dredging rates and use closed grab dredgers to reduce sediment spread.
- Prevent chemical spills and runoff from construction sites.
- Monitor marine water, sediment, and ecology before and during dredging.
- Control waste and sewage discharge from ships.
- Treat oily wastewater through oil-water separators before discharge.

5.3 Water Environment

During construction, untreated domestic and industrial wastewater, along with runoff carrying solvents, paints, or metals, may cause water stagnation and contaminate nearby surface and groundwater. In the operation phase, bilge oil from ships and accidental cargo spills pose major risks to marine water quality. However, such impacts can be prevented by adopting appropriate mitigation measures which are described below.

Mitigation Measures:

- No untreated wastewater will be discharged on land or into surface water.
- Adequate drainage with separate collection for stormwater, wash water, and wastewater will be provided to prevent contamination.
- A 30 KLD STP and 134 KLD ETP will treat sewage and effluents, respectively.
- Specialized handling systems will minimize spill risks; accidental spills will be contained, collected, and treated.

- Stormwater from cargo areas will be managed to avoid marine pollution.

Air Quality

Activities such as site levelling, drilling and material transport may impact air quality due to exhaust emissions, dust suspension, and traffic congestion along public roads. However, such impacts can be prevented by adopting appropriate mitigation measures which are described below.

Mitigation Measures:

- Cover vehicles transporting soil and aggregates with tarpaulins; restrict stoppage near settlements.
- Use wet drilling systems or dust collectors on drilling machines.
- Provide PPEs like dust masks and enclosures for workers engaged in drilling and welding.

5.4 Air Modelling

AERMOD (steady-state Gaussian model) was used to predict pollutant concentrations. Results indicate that predicted levels remain within National Ambient Air Quality Standards (NAAQS).

Operational Phase Mitigation Measures:

- Ensure vessel emissions comply with MARPOL and Euro standards.
- Cover cargo trucks/rail with tarpaulins and conduct regular emission checks.
- Restrict entry of vehicles without valid Pollution Under Control (PUC) certificates and highly polluting vehicles.
- Expand green belts around the port to reduce air and noise pollution.
- Ambient air quality monitoring will be continued during master plan development.
- Conduct regular health monitoring/checkup for sensitive groups such as workers and nearby residents.

5.5 Noise

Construction activities may elevate ambient noise levels due to machinery, vehicle movement, and pile driving. However, such impacts can be prevented by adopting appropriate mitigation measures which are described below.

Mitigation Measures:

- Provide PPEs like earplugs and earmuffs to workers exposed to high noise levels.
- Install acoustic enclosures, vibration dampers, and insulators on noisy equipment.
- Schedule construction during daytime and weekdays to minimize vibration impacts.

5.6 Solid Waste Management

Solid waste will be generated during construction and operation phases of the project. Necessary mitigation measures will be provided.

Mitigation Measures:

- Dispose hazardous waste through authorized vendors in compliance with Hazardous and Other Wastes Rules, 2016(as amended).
- Solid waste will be managed as per Solid Waste Management Rules,2016(as amended).
- Compost biodegradable waste for use in green belt development.
- Inform shippers about available waste management facilities and encourage their use.
- Appropriate management for garbage. Solid waste disposal will be implemented.

6 Analysis of Alternatives

Karaikal Port is already an operational port; hence, no alternative site was considered for the Master Plan. The development includes capacity enhancement, additional berths, breakwater extension, various alternatives studied for river/creek diversion within the project boundary.

7 Environmental Monitoring Programme

A comprehensive monitoring programme has been designed to track environmental parameters post-project. Monitoring is essential to identify potential impacts, assess environmental health, and enable timely corrective measures.

8 Additional Studies

- **Risk Analysis**

Risks linked to handling multipurpose, liquid, gas, and cryogenic cargo were assessed. Mechanized loading/unloading systems are planned for safe operations.

- **Disaster Management Plan**

DMP was prepared to mitigate hazards and ensure safety of people, property, and the environment during construction and operations.

- **Oil Spill Contingency Plan**

Oil Spill Contingency Plan was developed to ensure quick, effective response, staff training, and protection of sensitive ecological and socio-economic areas.

- **Traffic & Transportation Study**

Traffic & Transportation Study was conducted to assess cumulative impacts and propose traffic management and decongestion measures.

- **Social Impact Assessment (SIA)**

No, resettlement or rehabilitation is required, as there are no settlements within the project site. Temporary impacts on nearby communities during construction, such as air pollution and noise, will be managed through dust control measures and installation of noise barriers. There are no fishing grounds in the proposed

development area. To prevent disturbance to fishermen, signboards will be placed near construction zones to keep them informed of ongoing activities.

- **Biodiversity Assessment study**

A total of 187 plant species were recorded in the study area, and none are listed under the IUCN threatened category. No mangrove species were observed at the port site. Among the 104 fauna species reported, four species are listed in IWPA schedule for which conservation plan is considered.

- **Replenishment and Saltwater intrusion studies**

The Replenishment and Saltwater intrusion studies were conducted covering terrain analysis, hydrodynamic studies, physico-chemical assessment of water and sediments, and saltwater intrusion studies for both pre- and post-monsoon periods. During pre-monsoon period and post monsoon period, the computed overall bed gradient from upstream to downstream is 1: 100000 shows that river exhibit a gradual bed slope. The flow velocity and discharge measurements were performed revealing net discharge of 1.2 m³/s and 1.4 m³/s directed towards the sea from the river in pre-monsoon and post-monsoon.

9 Project Benefits

- Enhance socio-economic conditions by attracting new investments and improving infrastructure in surrounding areas.
- As part of the social upliftment activities, KPPL fosters balanced growth, ensuring that development aligns with both ecological and economic stability.
- Through social upliftment activities, KPPL proposed to provide education support, skill training activities, organizing medical camps and other allied welfare initiatives.
- During the construction phase, around 500 workers will be employed. Once operational, the port is expected to generate approximately 1,050 job opportunities, comprising 150 direct employment and 900 indirect employment opportunities.
- With the proposed master plan development, KPPL shall boost up industrialization in the region.

10 Environmental Management Plan

Monitoring is a mandatory task for sustainability of any developmental project and is relevant to any process of environmental assessment. The parameters to be monitored for the various environmental components along with their applicable standards, frequency and supervising responsibilities are given in the subsequent sections.

The environment management plan consists of Greenbelt Development Plan; Marine Biodiversity Management Plan; Wildlife Conservation Awareness Programme; Exploring Renewable Source of Energy in terms of Solar and Wind. KPPL Measures towards India's Commitment for Climate Change; Occupational health

and Safety etc., Apart from these the designed inbuilt components such as Air pollution abatement measures, water and wastewater treatment measures, Storm water management Plan, Stockyard runoff management plan, Noise abatement measures, Solid and hazardous waste management measures, selection of suitable outfall locations etc., which will ensure effective environment management.

11 Budgetary Provisions for EMP

The budgetary estimate for Capital Environmental Management Cost for Proposed Master Plan ~INR 183.47 crores and the annual budgetary estimate during full operational phase is ~INR 9.94 crores.

12 Social Upliftment Activities

KPPL is deeply committed to supporting the community and promoting sustainable development. The company integrates social upliftment activities as a core business model, adopting a holistic approach that directly benefits the communities it impacts.

Through this approach, KPPL fosters balanced growth, ensuring that development aligns with both ecological and economic stability.

The key social upliftment activities include the following:

- Education Support
- Healthcare Programme
- Sustainable Livelihood Programme such as sanitation and drinking Water Initiatives
- Supporting self-help groups (SHGs) for women in neighbouring villages
- Other welfare activities like skill training programs, promoting sports by providing equipment, tree plantations etc.
- Community Infrastructure Development
- Emergency Response during floods



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