Proposed Terms of Reference for Prior Environment Clearance

For

“Development of a New Major Port in Kanniyakumari District in

Tamil Nadu”

by

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Prepared by

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1. INTRODUCTION

The proposed New Major Port at Kanniyakumari District in Tamilnadu will be developed by M/s V.O. Chidambaranar Port Trust. The entire port will be developed in the reclaimed land along the coastline (seaside). Reclamation shall be carried out using dredged material for providing land side facilities as follows: (i) Phase 1 (2018-2025): 164 ha (ii) Phase 2 (2025-2030): 10 ha (iii) Phase 3 (2030-2035): 43 ha. Dredging will be carried out at berthing area, turning circle, & approach channel. Material generated from dredging will be used for reclamation for development of operational areas.

The proposed Terms of Reference (ToR) for Environment Impact Assessment (EIA) study are drawn keeping in view of EIA Notification No.SO 1533 dated September 14, 2006 (as amended) and also based on Environmental Impact Assessment Guidance Manual for Ports and Harbours (published in February 2010) by the Ministry of Environment and Forests (MoEF), Government of India (GoI). Thereafter GoI activated the proposed port development in Kanniyakumari District and got prepared "Rapid Techno-Economic Feasibility Report for Development of Colachel Port in Tamilnadu" (TEFR) (August 2015) by the consultants M/s. TYPSA-BCG (consortium) through V.O. Chidambaranar Port Trust.

The TEFR recommended development of the Port (the Project) at Enayam location as first option, and the Kanniyakumari location was qualified as the second best option. The Union Cabinet had accorded in-principle approval on 05.07.2016 for Development of a New Major Port at Enayam in Tamilnadu communicated through letter no. F.No. 25021/12/2016-VOCPT dated July 11, 2016. The proposal for the development of a new major port at Enayam was submitted to MoEFCC on online portal 24th Oct 2016 (Proposal No. IA/TN/MIS/59873/2016) requesting for Terms of References to go further for EIA studies to procure environmental clearance. ToR was granted File No. 21-26/2016-IA-III dated 19th Dec 2016 by MoEFCC along with additional ToR points for the proposed project (development of a new major port at Enayam).

During the development of a new Major Port at Enayam, the local population showed their opposition to the Project. Several initiatives were taken to resolve the concerns of the fishermen groups and local public at various levels under the guidance of Ministry of Shipping, GoI, Tamilnadu State Government & Kanniyakumari District Administration. As the local population expressed concern hence alternative site was explored. After detailed inspections, study of coastal morphology and the shore features, a new multicriteria analysis comparing all the proposed alternatives has been performed. As a result, the site between Keela Manakudi and Kovalam (Kanniyakumari 2) emerged as the best suitable location. The proposed location has relative advantages over the Enayam site as it minimizes the effect on local population and tourism. With a view to implementing the project, it has been decided to prepare a Detailed Project Report (DPR) and Bid documents for the development of Kanniyakumari Port.

2. PRELIMINARY PROJECT DETAILS

The proposed Port envisages construction of breakwaters, dredging- reclamation, container berths, with provision for addition of multi-purpose/dry bulk berths. The depth at the harbour is proposed at 18.6 m suitable for 18000 TEU capacity Container vessels and cape size bulk carriers. Operation/material handling and process flow sheet from ship to outward transport details will be include in EIA report.

Port Layout

A port layout is proposed with South-East opening. Planned port facilities are as discussed below.

Berth length (cumulative)

Phase 1: 1,000 m (800 m for containers and 200 m for ancillary vessels).

Phase 2: 2,200 m (2,000 m for containers and 200 m for ancillary vessels).

Phase 3: 3,400 m (3,200 m for containers and 200 m for ancillary vessels).

Approach Channel:

Outer Channel: -20.0 m CD deep.

Inner Channel (stopping): -18.6 m CD deep.

Turning Circle:

Diameter: 720 m

Depth: (-) 18.6 m CD

Quantities

The estimated dredging and reclamation quantities are as follows:

Phase	Dredging	Reclamation
Phase 1 (2018-2025)	14.6 million Cu.m	14.6 million Cu.m
Phase 2 (2025-2030)	2.4 million Cu.m	2.4 million Cu.m
Phase 3 (2030-2035)	0 million Cu.m	7.3 million Cu.m

Phase wise Development

The proposed port construction involves offshore infrastructure namely Breakwater, Berths, Container & Multi-purpose cargo terminal. Phase-wise proposed development of capacities & capacity generation as given below:

Description	Units	Phase 1 (2018-2025)	Phase 2 (2025-2030)	Phase 3 (2030-2035)	Total
Breakwater	M	5,050	0	0	5,050
Reclaimed land	Ha	164	10	43	217
Berths total lengh	M	1,000	1,200	1,200	3,200
Approach Channel	2,980 m long, 400 m wide				
Container berth (18.6 m depth; vessels 16 m draft, 18000 TEUs)	M	800	1,200	1,200	3,000
Capacity	MTEUs/MTPA	1.60/24	2.40/36	2.40/36	6.40/96
Project Cost	Rs. Crores	6,915.48	5,599.99	7,368.40	19,883.87

Road and Railway Connectivity

New six lane road connectivity corridor of about 5 km from proposed Kanniyakumari Port to NH-7 is proposed. New BG Railway link corridor of length of about 5 km connecting Kanyakumari Port with the existing BG Track (Nagercoil – Kanniyakumari) is proposed from Kanniyakumari railway station.

Project Category

The proposed project falls in **Category 'A'** as specified in the EIA Notification, 2006 and hence, requires Environment Clearance and CRZ clearance.

CRZ maps meeting the requirements of the CRZ Notification 2011 will be prepared by a MoEFCC approved agency.

3. PROPOSED NEW INFRASTRUCTURES

A new corridor is proposed to connect the port to national highway network and to railway network. The corridor has a width of 100 m to accommodate a six lane road (4.2 km) and a double track railway (4.7 km) link. The road will connect to NH-7 at Kanniyakumari, while the railway will connect to the existing line Trivandrum – Kanniyakumari.

4. BASELINE ENVIRONMENTAL MONITORING

The baseline environmental studies will be carried out for terrestrial and marine environments. The study will be a combination of primary (field surveys) and secondary data collection.

Study Period: The study period shall be for one full season (covering 12 weeks or 3 months) during Post monsoon season of 2017.

Study Area: Study area would be of 10 km radius from the edges of the port.

4.1. Land Environment

Land: No land will be required for port construction. The Port will be entirely developed on reclaimed land. Only railway and road links corridor will require land. Availability of land for earmarking for the port without causing hardship to local habitat will be justified.

Topography: Baseline data describing terrain features, habitations, cropping pattern, forest cover, environmentally sensitive areas etc will be discussed.

Geology: Baseline data describing geological setting, seismicity and associated hazards, availability of quarry sites will be discussed.

Soil: Baseline data including soil type and characteristics based on soil investigations will be provided.

4.2. Water Environment

Groundwater & Surface Water:

Water quality will be analysed for both surface and groundwater sources. Water samples will be collected and analysed, once in season, for physico-chemical, bacteriological and biological characteristics. Water Quality will be monitored adopting procedures as per IS: 3025, APHA, AWWA, and relevant guidelines of MoEF/ CPCB.

Sampling parameters: pH, EC, Salinity, temperature, TSS, turbidity, nutrients, Oil & grease, DO, BOD, Heavy metals total coliforms, total hardness (calcium & magnesium hardness), total alkanity, Chloride, sulphate, nitrate, fluoride, sodium, potassium, total nitrogen, total phosphorus, faecal coliforms.

4.3. Marine Environment

Marine environment in the region will be assessed through field studies and compilation of secondary data and literature surveys. Marine environmental studies will be undertaken covering water quality, sediment quality, biological aspects (planktons and benthos), nesting grounds of sensitive marine fauna, fishing and breeding grounds and fishery resources.

4.3.1. Marine Water Quality

Surface and bottom samples will be collected using NISKIN Sampler. Some of the physical parameters such as Temperature, pH, Salinity and Transparency will be observed on-site. Samples will be preserved for assessing other physic-chemical and bacteriological parameters later. Methodologies used for collecting, preserving and analysing water samples will be as per standard protocols and procedures defined in standard manuals and reference material viz. IS: 3025, APHA Methods22nd edition,. Parameters that will be assessed are listed below:

Physic-chemical parameters: pH, temperature, salinity, turbidity, suspended solids, , DO, BOD, chloride, silicate, hydrocarbons, oil and grease

Nutrients: nitrite, nitrate, ammonia, total nitrogen, total phosphates, sulphide

Heavy Metals

Bacteriological parameters: Total Coliforms, Faecal Coliforms.

4.3.2. Sediment Quality

Sediment samples will be collected at the proposed project and the neighbourhood areas using a suitable grab (Van Veen Grab) after collection, samples will be used for physico-chemical & heavy metal analysis. Parameters that will be assessed will include composition, texture, organic matter and heavy metals.

4.3.3. Coastal hydrology and geomorphology

Bathymetric and geophysical surveys will be performed by means of a single beam echo sounder, a side-scan sonar and a sub-bottom profiler.

Data on waves, current, winds and tides will be also collected during the surveys, and will be completed by the latest hindcast information. Wave's climate will be evaluated by means of mathematical models.

4.4. Biological Environment

4.4.1. Marine Biological Aspects

Biological parameters viz., phytoplankton, zooplankton, chlorophyll and primary productivity will be assessed.

Plankton content in coastal waters will be assessed through collection of water samples using Plankton net of suitable mesh size. All net hauls will be fixed in buffered 5% Formaldehyde and stored for analysis in Laboratory. In addition, Phyto plankton samples collected with NISKIN sampler will be fixed in Lugol's iodine for quantitative enumeration. Quantitative enumeration will be done using a Sedgewick Rafter counting chamber following a standard protocol (UNESCO, 1978). A research microscope will be used for taxonomic identification.

Primary Productivity will be measured following light and dark bottle method for estimate Net & gross primary productivity (Gaarder and Gran, 1927, re-described Subba Rao, 2002).

4.4.2. Benthic Communities

Offshore and intertidal sediment samples intended for benthic communities assessment will be preserved with Rose Bengal and Formalin Solutions. Analysis of benthic communities will include macro benthos in the region.

4.4.3. Terrestrial Ecology

Flora and Fauna, in project area, will be assessed through field observations (primary data collection) as well as through secondary literature. Literature / publications, of Forest Department and NGOs working in Biodiversity will be considered as source of secondary data, if available. Stratification of the study area will carried out using available micro-habitat (or geographical features) within the study area. Sampling locations, identified, will represent the micro-habitats / strata present within study area.

Vegetation type will be identified using existing literature whereas vegetation composition will be assessed using primary data collection. An Inventory (free listing) of flora and fauna observed, within terrestrial ecosystem, will be prepared using standard ecological techniques.

Through the analysis, dominant species of the project area will be identified. Locations where endangered species are observed, will be identify and mark.

4.5. Air Environment

4.5.1. Meteorology

Meteorological parameters such as temperature, relative humidity, wind speed and direction, etc. will be recorded by a meteorological station (automatic weather monitoring station) in study area during study period.

4.5.2. Ambient Air Quality

Ambient air quality monitoring will be carried out as per CPCB guidelines. Parameters to be monitored include PM10, PM2.5, SO2, NOX, CO and HC. Frequency of sampling is twice a week at each location. *During* monitoring season (12 weeks) One sample of 24 hours duration each will be taken for PM10, PM2.5, SO2 and NOX. For CO and HC monitoring, eight hourly average samples will be taken on each monitoring day.

4.5.3. Noise

Intensity of noise levels in the project area and the neighbourhood up to 1 km or nearest residential area will be measured. Peak noise and Equivalent noise levels will be measured at hourly intervals during study period. Monitoring locations will cover important land use such as residential and sensitive areas.

4.6. Socio-Economic and Occupational Health Environment

Baseline demography and socio-economics will be covered within the study area. Data on socio-economic profile of area including population, literacy, and occupation pattern, educational and medical facilities will be collected.

5. ESTABLISHMENT OF BASELINE ENVIRONMENTAL CONDITIONS

Baseline conditions (environment and social) will be established by compiling data generated from field surveys and secondary data. Further, baseline environmental conditions will also be graphically presented and critical locations in project area, if any, in environmental and social context will be identified.

6. ANTICIPATED ENVIRONMENTAL IMPACTS AND THEIR MITIGATION MEASURES

Environmental attributes likely to be affected by project activities will be identified and impacts will be assessed. Project activities can be broadly classified into construction and operational phase activities. Most appropriate and accepted methods will be used to quantify impacts likely to arise due to development of port. The mitigation measures proposed to minimise/avoid each of the likely impacts that occur during construction and operational phases will be discussed in detail.

In addition to above, the impact and management plan for fishing activity (if any), dredging activity on shore line, rock dredging will also be investigated.

7. ADDITIONAL STUDIES

7.1. Risk Analysis and Disaster Management Plan

Risk analysis shall be carried out for liquid terminals, pipelines and storage tanks. Maximum inventory of storage at site shall be taken into account. Potential hazards shall be identified through Consequence Analysis and Fire & Explosion hazards. In order to manage potential hazards and disasters effectively and minimise damage, an on-site management plan approach will be adopted and details will be provided.

An Oil Spill Contingency Plan (OSCC) will be also included for prevention and responding to oil spill emergency, to delineate functions of coastal state pollution control board (TNPCB) and other authorities and concerned departments and agencies for the operational responsibility to marine incidents and to be able to respond to any further oil spill disaster contingency.

7.2. Sediment transport studies and shoreline changes

The impact of the port on the sediment balance of the coast, and the beach profile at both sides of the port will be assessed through mathematical models and empirical formulation.

7.3. Wave tranquillity assessment

This study will be performed by means of mathematical models in order to validate the layout in terms of operability of the port and berths.

7.4. Rehabilitation and Resettlement Action Plan

No displacement of the population is anticipated. However data on existing socioeconomic status of population shall be collected from primary and secondary sources.

7.4.1. Traffic Management Studies

The Traffic Management Study on the impact of heavy vehicles movement through Highway NH-7 and Wagon Movement through Main Railway line will be detailed in the EIA.

7.4.2. Corporate Social Responsibility

Corporate social responsibility measures will be taken up by VOCPT for community development will be covered in EIA study.

8. PROJECT BENEFITS

The Development of a port in Kanniyakumari District with deep drafted container terminals matching with global cargo handling efficiencies will facilitate direct shipment of Indian containers to oversea destinations avoiding transhipment through Colombo, Kelang, & Singapore Ports, Thus port will open up

a gateway for EXIM trade and will reduce the annual revenue losses of nation. In long run, the proposed port will act as a catalyst for the development of port based industries leading to Industrialization of the region.

Proposed project will create more jobs and employment opportunities to the local population comprising of skilled, semi-skilled and unskilled work force during construction and operation phases of the project.

The project benefits in terms of improvements in the physical infrastructures and social infrastructure, employment potential and other tangible benefits will be discussed in detail.

9. ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) will be formulated for proposed project. EMP will address mitigation measures for marine and terrestrial environmental attributes separately, covering all relevant aspects as per recommendations and requirement of MoEF. Based on identified impacts associated with project, an EMP will be framed for the construction and operations phases of project.

9.1. Environmental Monitoring Program

Environmental Monitoring Programme covering the technical aspects (including methodology, parameters, frequency, location, etc., and detailed budget) of monitoring to check the effectiveness of mitigation measures during construction and operational phases will be prepared.