NATIONAL SHIPBUILDING AND HEAVY INDUSTRIES PARK
ANDHRA PRADESH

EXPRESSION OF INTEREST (EoI)
along with Budgetary Offer

for

APPOINTMENT OF A TECHNICAL CONSULTANCY FIRM FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE DEVELOPMENT OF DUGARAJAPATNAM PORT-CUM-SHIP BUILDING-CUM-SHIP REPAIR CLUSTER IN THE STATE OF ANDHRA PRADESH

May 2026

NOTICE INVITING EXPRESSION OF INTEREST

NAME OF WORK	**Expression of Interest (EoI) along with Budgetary Offer for Appointment of a Technical Consultancy Firm for the Appointment of a Technical Consultancy Firm for Preparation of Detailed Project Report (DPR) for the development of Dugarajapatnam Major Port-cum-Shipbuilding-cum-Ship Repair Cluster in the state of Andhra Pradesh**

EOI Reference No.: 01/SE (S)/APMB/2026-27

EOI Publication Date: **22/05/2026**
Submission of EOI Document along with Budgetary Offer: on or Before **10/06/2026 @ 18:00 Hours.**

To,

The Project Officer
NSHIP-AP, AP Maritime Board Office,
2nd Floor, IHC Corporate, Bus Depot Road,
Mangalagiri AP - 522503

For further details and general enquiries, the prospective applicants may write to Managing Director at nship-ap@apmaritime.in; ceo-apmb@ap.gov.in; shipbuilding-apmb@apmaritime.in; cevizagport@vpt.shipping.gov.in; ac.vikash@vpt.shipping.gov.in, during working hours, before the last date and time of submission of EoI document.

Any modification / Corrigendum, if any, will be placed informed through mail only and shall not be released in any other form.

Managing Director

NSHIP-AP Ltd

Expression of Interest (EoI) along with Budgetary Offer for Appointment of a Technical Consultancy Firm for the Preparation of a Detailed Project Report (DPR) for the Development of Dugarajapatnam Major Port Cum Ship Building Cum Ship Repair Cluster in the State of Andhra Pradesh

1. Invitation

National Shipbuilding and Heavy Industries Park Andhra Pradesh Ltd (NSHIP AP Ltd), hereby invites **Expression of Interest (EoI) along with Budgetary Offer** for appointment of a **Consultant** for the Preparation of a Detailed Project Report for the Development of Dugarajapatnam Port Cum Ship Building Cum Ship Repair Cluster in the State of Andhra Pradesh.

2. Background

National Shipbuilding and Heavy Industries Park Andhra Pradesh Ltd (NSHIP AP Ltd), is a joint venture between Andhra Pradesh Maritime Board (APMB) and Vishakhapatnam Port Authority (VPA) proposes to develop a major port cum ship building cum ship repair cluster at Dugarajapatnam in the state of Andhra Pradesh. This initiative is aligned with national maritime strategies such as Maritime India Vision 2030 and Amrit Kaal Vision 2047, aimed at strengthening port infrastructure, enhancing logistics efficiency, and supporting the growth of maritime trade and shipbuilding capabilities in India.

The proposed site is strategically located along the east coast in proximity to key maritime and strategic assets, including Sriharikota (ISRO launch centre), Pulicat Lake, and existing ports such as Krishnapatnam and Ennore. Given the ecological sensitivity of the region and the scale of the proposed development, VPA has already commissioned a Techno-Economic Feasibility Report (TEFR) through RITES Limited, which includes detailed model studies on littoral drift, wave dynamics, shoreline changes, and harbour conditions, forming the technical basis for further project development.

Building upon this preliminary work, NSHIP AP Ltd now intends to appoint a qualified Technical Consultant for comprehensive consultancy services, including review of feasibility studies, environmental assessments and clearances, preparation of a bankable Detailed Project Report (DPR). The objective of this EOI is to ensure appointment of a consultant for preparing DPR for the development and implementation of the Dugarajapatnam Port cum Ship Building cum Ship Repair cluster.

3. Objective

The objective of this Consultancy is to:

3.1 Part A: Review of Techno – Economic – Feasibility Study prepared for the project. The Technical Consultant shall undertake a comprehensive review of the existing TEFR, along with all available data and relevant reports. Based on this review, the Consultant shall:

(a) Identify gaps, inconsistencies, or shortcomings in the existing information and data;
(b) Assess the adequacy and relevance of the current inputs for project development;
(c) Recommend necessary additions, modifications, or updates required to strengthen the TEFR; and
(d) Indicate specific areas where further data collection, validation, or analysis is required.

3.2 Part B: Prepare a Detailed Project Report (DPR) for the phased development of the Project. The scope of services for the Detailed Project Report shall comprise of the following, but not limited to:

(a) Data Collection
(b) Preliminary Surveys
(c) Analysis of Proposed Site of Development
(d) Assessment of Design Vessel Sizes
(e) Detailed layout of the port and shipbuilding cluster including layout of the shipyard. The layouts for port and shipyard shall be studied for and discussed in the report separately
(f) Vessel size estimates
(g) Detailing of Marine and Landside facilities. The facilities for port and shipyard shall be studied for and discussed in the report separately
(h) Surveys and investigations
(i) Internal and external infrastructure connectivity to port and the shipbuilding cluster
(j) Market scenario overview and demand assessment. The market scenario and demand assessment for port with respect to cargo volumes and shipyard with respect to expected orders for ship

building and ship repair shall be studied for and discussed in the report separately

(k) Project costs. The project costs for common infrastructure such as breakwaters, and detailed capital costs for development of port and ship building and ship repair shall be studied for and discussed in the report separately

(l) Tariff and revenue calculations as per applicable scale of rates. The applicable tariffs along with revenue calculations for port and ship building and ship repair shall be studied for and discussed in the report separately

(m) Financial analysis. The cashflow and return analysis along with sensitivity analysis for port and ship building and ship repair shall be studied for and discussed in the report separately

(n) Project implementation schedule

(o) Preparation of EPC Tender documents for bidding process including equipment and all utilities along with good for construction drawings

This list is indicative, and the DPR shall cover all necessary aspects required for proper project planning and implementation. If any additional studies, reports, or analyses are required for completing the DPR, the Technical Consultant shall carry out and submit the same as part of this assignment, without any extra cost to the Authority.

Alignment with SbDS Guidelines

The DPR prepared under this assignment shall conform in structure and content to the Guidelines for Greenfield Shipbuilding Cluster Development under the Shipbuilding Development Scheme (SbDS) issued by the Ministry of Ports, Shipping and Waterways (MoPSW), dated 26th December 2025 (Reference No. SY-13017/2/2024-SBR). In particular, the DPR shall address all sections prescribed in Annexure I of the said Guidelines, including project overview, site analysis, technical design and infrastructure, environmental and social impact assessment, financial analysis and funding plan, implementation schedule, risk assessment, and monitoring framework. The DPR must be of a quality suitable for submission to the Independent Evaluation Agency (IEA) appointed by the Implementing Agency (Directorate General of Shipping) for technical and financial appraisal under the SbDS. The Consultant shall obtain, study, and ensure full compliance with Annexures I and II and Schedule I of the SbDS Guidelines, the Maritime India

Vision 2030, Maritime Amrit Kaal Vision 2047, EIA Notification 2006, CRZ Notification 2019, AP Maritime Policy 2024, and NDMA guidelines for coastal infrastructure.

3.3 Part C:- Conduct EIA and other relevant studies to obtain EC for the project: Prepare the draft Terms of Reference (ToR) for Environmental Impact Assessment (EIA) study along with all related documents required for submitting application for Environmental Clearance (EC) and obtain the approved ToR from MoEF& CC on behalf of the Authority, undertake environmental studies and preparation of EIA report and all documents required for submission to the MoEF& CC for EC, in accordance with prevailing regulatory frameworks. Consultant shall obtain EC clearance from Govt by appointing NABET accredited company. The Authority shall also ensure that requisite studies, reports, and applications are prepared through duly accredited and registered experts/consultants, as mandated by the concerned regulatory authorities.

4. Eligibility Criteria

(a) The Bidder should have completed, consultancy services for Port Projects and/or Shipbuilding Yard Projects involving preparation of Basic Engineering, Depth Feasibility Study, Detailed Project Report (DPR) and/or Detailed Engineering, meeting either of the following criteria in the last 7 years with

- (i) At least one project having an estimated capital cost of at least Rs.1000 Crores (or)
- (ii) At least two projects, each having an estimated capital cost of at least Rs.700 Crores.

(b) The Bidder shall have an average annual financial turnover during last three financial years (2022-23, 2023-24 & 2024-25) of at least Rs.50 Crore (INR). Audited financials / balance sheets for last 3 financial years or a Statutory Auditor / Chartered Accountant certificate in this regard has to be furnished.

(c) A firm may submit its Expression of Interest (EoI) individually. However, if a firm does not possess the requisite experience on its own, it may form a consortium (not exceeding two firms) to meet the eligibility criteria. In the case of an EoI submitted by a consortium, at least one of the consortium members shall possess the minimum requisite experience as specified in this section.

(d) Notwithstanding the foregoing, the Authority reserves the right, at its sole discretion and for reasons to be recorded in writing, to permit participation of

any agency in the tendering process.

5. Budgetary Offer The Budgetary Offer shall be submitted in the following format:

Part	Description	Time Period	Amount
I	Professional Fee for Preparation of DPR	9 Months	₹, Lump Sum
II	Professional Fee for obtaining Environmental Clearances/ CRZ Clearances	15 Months	₹, Lump Sum

Applicable taxes shall be quoted separately. Cost of deployment of full-time and on-call personnel, including travel, miscellaneous expenses, etc., shall be deemed included in the quoted fee.

The Key Personnel *requirements* for Part I, II and III are provided in **Annexure-I**,

6. Duration of Engagement

(a) **Part-I** shall be completed not later than 9 months from the award of the contract,

(b) **Part-II** shall be completed not later than 15 months from the award of contract,

7. Submission of EoI: The EoI shall include:

(a) Company profile

(b) Relevant project experience

(c) Budgetary Offer as per prescribed format

8. Disclaimer

This EoI is issued **for budgetary estimation and planning purposes only** and does not constitute a commitment for award of work. NSHIP AP Ltd reserves the right to modify, cancel, or withdraw this EoI without assigning any reason.

9. Authority

This EoI is issued with the approval of the Competent Authority, NSHIP AP Ltd.

FINANCIAL OFFER

(on the letter head of Consultancy Firm)

To,

The Project Officer
NSHIP-AP, AP Maritime Board Office,
2nd Floor, IHC Corporate, Bus Depot Road,
Mangalagiri AP - 522503

Sub: **Appointment of a Technical Consultancy Firm for the Preparation of a Detailed Project Report and services for the Development of Dugarajapatnam Port Cum Ship Building Cum Ship Repair Cluster in the State of Andhra Pradesh - Reg.**

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Information and Documents to be submitted by the Applicant

1. Applicant Details:

S. No.	Description	Details		
1	Name of the Company submittingthe proposal	*(Attach photocopy of Certificate of Registration along with a one page write up or brochure of the company.)*		
2	Registered Address, telephone No., fax no. e- mail ID, website			
3	Contact Person, Designation and address including contact no. and e-mail ID			
4	Organizational Profile			
(a)	Existing Business activities			
(b)	Names of Directors of the Board and Chairman / Chief Executive Officer, their nationality, if applicable			
5	Financial Capability (For Past Three Completed Financial Years)	**2022 - 23**	**2023 - 24**	**2024 - 25**

(a)	Turn Over (The Applicant shall submit the 'Financial Statements' for the last three financial years, as per their latest Audited Balance Sheet, Certified by the Statutory Auditor)			
6	Technical Experience of firm (Submission of completion certificates showing the relevant experience)			

2. Financial Offer:

S.No	Description	Quantity	Unit	Amount in Rs. (excl. GST)	
1	Professional Fee for Preparation of DPR				
2	Professional Fee for obtaining Environmental Clearances/ CRZ Clearances				

Note: Rate shall be exclusive of GST

Seal & Signature of the Consultant Firm

ANNEXURE-I

1. TERMS OF REFERENCE

The scope of services of the Technical Consultant shall comprise of the following, but not limited to:

Part A: Review of Component of Techno-Economic Feasibility Report (TEFR).

1.1 Review of the available earlier studies/ reports and development plans

The Technical Consultant is required to study the available earlier studies/ reports and development plans proposed by RITES, VPA, APMB, NCSCM, along with TEFR and studies on breakwater by IIT Madras. However, it shall be noted clearly that the above documents are only for reference. But the DPR shall be done in a full-fledged manner, superseding shortcomings of earlier studies, duly carrying out studies/ investigation/ preliminary design, etc., covering all that is required for successful implementation of the project.

1.2 Data Collection:

Data collection required for the review of TEFR on the project would include the following, but not limited to:

(a) Collection of all secondary data and reports available with the Authority.
(b) Site visits and collection of additional data, if any, as required.
(c) Assessment of data gap and sources of additional data
(d) Additional data generation, including meetings, discussions, additional field surveys, and investigations, as felt necessary.

The additional surveys and investigations, if any, proposed for the site are to be carried out by the Technical Consultant, in accordance with IS Code of Practice of Ports and Harbours IS-4651 Part-I to Part-V. All the standards to be adopted by the Technical Consultant should refer to the above standards.

1.3 Review of Preliminary Assessment of Cargo Traffic Potential

Review the assessment of the traffic potential made in TEFR for the proposed Port project in order to conceptualize the project and including review of the basic

planning & design parameters and physical requirements of the project, such as land, infrastructure, marine access, connectivity etc., and to review the capital and O&M costs and revenue earnings from the project.

1.4 Review of Vessel Size Estimates

(a) Assess likely vessel sizes based on current and future scenarios, shipping and trade, types of Cargo to be handled, market demand, supply side analysis, draft considerations, depth available, and cost of creating and maintaining depth etc, Also, assess vessels to be built and repaired based on demand-supply side analysis.

(b) Convert cargo traffic estimates into vessel movement estimates in terms of vessel sizes and numbers.

1.5 Review on Site Investigations Report (landside & marine)

(a) Ground reconnaissance for general examination of the proposed locations

(b) Review on Study of different parameters/conditions like marine, meteorological, hydrographical, and hydrological data, including the availability of deep water close to the shore.

(c) The Technical consultant shall review and recommend the land requirement for the development of Port facilities, Shipyard facilities, allied infrastructure, and associated business establishments in tune with the stage-wise development plan of the ~~Port~~ cluster and identify a suitable site/location to supplement the proposed port land in TEFR, if any is required.

1.6 Analysis of Proposed Site of Development:

The Technical Consultant will examine TEFR in terms of the proposed site of development and suggest site modifications if required. This analysis will help to identify the most suitable site for the project. The findings and analysis from the above, together with associated relevant parameters, should be duly considered and used for the preparation of the Review Report on TEFR for the selected location.

1.7 Preliminary Engineering Surveys and Investigations

(a) Collection of the Geotechnical Investigation data of the adjacent locality available with the Authority

(b) Collection of the Seabed surveys (Bathymetry), including side-scan sonar survey available with the Authority
(c) Collection of Oceanographic and meteorological data
(d) Wind and wave hindcasting study for the identified location
(e) Topographic surveys
(f) Construction material investigation
(g) Study of bathymetry charts
(h) Extreme cyclone analysis and storm surge assessment relevant to the identified location
(i) Any other surveys, studies, investigations, or simulations that would be required shall be carried out by the Consultant.

1.8 Review on the Preliminary Design & Detailing of preferred option given in TEFR

The suggested plan in TEFR including the Master Plan would have to be detailed to an appropriate level. Suggested points for review are as follows:

(a) **General Layout**

To review and modify if felt required the general layout of Port, Shipyard and Ancillary Industries, which shall be carried out in consultation with all agencies relevant to the operations of the facility such as road transport operators, railways, shipping lines, shippers, clearing and forwarding agents examination & certification agents, customs / excise, equipment suppliers etc., in order to ensure visibility of the proposed methodology of operation and the expected efficiency and productivity levels.

(b) **Review of Preliminary Design and Project Components**

While reviewing the TEFR in terms of given parameters, if felt essential, on the basis of the vessel demand for shipbuilding/ ship repairs, projected cargo traffic and shipping pattern, plan and design the required components to internationally accepted standards and norms, the identified facilities and infrastructure components including but not limited to:-

(i) Structures
(ii) Port and Berth Layout
(iii) Shipyard Layout including workshops, dry docks etc

(iv) Dredging and reclamation
(v) Aids to Navigation
(vi) Cargo handling and marine equipment
(vii) Onshore facilities & Warehouses
(viii) Connectivity
(ix) Utilities
(x) Social Infrastructure

The Consultant shall carry out necessary studies to assess all required utilities and supporting infrastructure for the proposed shipbuilding facility, including but not limited to road connectivity, rail connectivity, electricity supply, water supply, drainage, sewerage, firefighting systems, communication network and other allied utilities required for the project.

The Consultant may, if deemed necessary based on technical, operational, commercial, environmental or implementation considerations arising during the course of the study, propose an alternative layout and revised master plan, along with detailed justification, planning parameters and associated infrastructure requirements, in lieu of or in modification to the layout proposed in the TEFR.

1.9 Model Studies

The following model studies were earlier carried out while preparing TEFR:

(a) Numerical Model Studies for determining breakwater siting, length, and alignment with reference to harbor tranquility, vessel manoeuvrability, etc.

(b) Numerical Model studies in respect of deep-water wave transmission to near shore area, hydrodynamic regime, sediment transport, and coastline changes in the influential area of the proposed port, including estimation of maintenance dredging requirement/ coastal protection works, if any are required.

1.10 Review of earlier studies and preparation of Environmental and Social Impact Assessment

(a) Preliminary assessment of the extent of land acquisition/ rehabilitation/ resettlement
(b) Preliminary assessment of the quantities of construction material required, its sources identification, including quarry locations

(c) Discussions with various stakeholders, NGOs, and local environmental authorities.

(d) Identification of issues with special references to CRZ issues, including mangroves and such sensitive features (if any), littoral drift, fugitive emissions from cargo, interferences with fishing activities during construction and operations, migration of workers, water requirements during constructions, etc.

(e) Environmental and Social Assessment study

(f) Segregate mitigable and non-mitigable issues

(g) Arrive at costs for E&S issues and mitigation measures

(h) Preparing the draft Terms of Reference (ToR) for EIA and obtaining the approved ToR from MoEF& CC on behalf of the Authority

(i) Consultant shall obtain EC clearance from Govt by appointing NABET accredited company.

1.11 Review and update the Preliminary Project Costs

(a) Based on the foregoing planning and design, facility configuration, equipment requirements, material surveys, environmental & social assessment surveys, etc., project costs shall be estimated and updated, if required.

(b) Cost estimates shall include capital and O&M costs. This shall also include the costs (landed) of all equipment, including insurance, freight and erection.

(c) The cost estimates shall also include the cost of land acquisition and connected rehabilitation and resettlement measures, and environmental impact mitigation and social impacts mitigation, including re-settlement and rehabilitation, as relevant

Part B. Preparation of Detailed Project Report

Note: - The requisite survey and investigation proposed for the site shall be carried out in accordance with IS Code of Practice of Ports and Harbours IS-4651 Part-I to Part-V, supplemented by internationally accepted standards such as PIANC, BS wherever Indian Standards are not available by the consultant. All the standards to be adopted by the Consultant should be in conformity with the above standards. The survey, investigations and studies may be limited to the extent required to fill the gap of the requirements of DPR preparation and those collected during the TEFR stage. For shipyards, the Consultant shall

ensure that all standards and methodologies adopted are compatible and in conformity with the Classification Society Standards and industry best practices applicable to shipbuilding and ship-repair infrastructure, including dry docks, wet basins, slipways, outfitting berths, heavy fabrication facilities, dredging, utility corridors and marine support infrastructure.

1.12 Site Investigations (Marine Side and Land Side)

Field survey of the Port cum Shipbuilding Cluster area including strip topography survey along the finalized road alignment to connect the National Highway and rail alignment to connect main line, using Total station, GPS, etc to collect the information on the location of permanent structures, roads and drains, railway network, buildings etc, and to submit survey data with drawings in soft and hard copies(sets) incorporating the Co-ordinates with latitude and longitude. The work includes the installation of survey pillars at intervals and strategic locations, mentioning their co-ordinates and Reduced Levels.

1.13 Detailed Geotechnical Investigations: (Boreholes)

Since GT Investigations are already carried out in the TEFR stage, reference may be taken from the TEFR Report. However, fresh Geotechnical Investigations, in the form of bore holes and collection of subsoil data, are required for planning & designing of marine structures (Breakwaters, coastal protection works, berth structures), dredging, pavement, buildings & structures in the proposed Port cum Shipbuilding Cluster area and along the road/rail corridors. The numbers/spacing of boreholes shall be in such a way to get sub-soil data representation of the location and collection of samples and shall comply with the IS or BS (if unavailable in IS) requirements. The consultant shall carry out marine-side investigations by drilling 2 confirmatory boreholes at the locations specified by the Authority. Further the consultant shall carry out landside technical investigations by drilling 2 confirmatory boreholes and 5 new boreholes in the proposed shipbuilding component area. The consultant shall also carry out borehole investigations along the road and rail paths by drilling one borehole for every 400-metre interval along the proposed alignment. The geotechnical investigations shall comply with the following general requirements.

(a) The boreholes shall be drilled from a fixed platform or a jack-up barge in sea areas.

(b) The depth of drilling of bore holes in the dredge areas of Harbour Basin and Approach channel shall be (–)25m below mean sea level or where ever it penetrates in to hard rock for a depth of 1 (one) meter whichever occurs earlier.

(c) The depths of bore holes to be drilled for collecting data for the design of structures shall be 60m below Mean Sea Level (MSL) or wherever it penetrates into hard rock for a depth of 3 (Three) meters, whichever occurs earlier so as to get enough data to decide the founding level of piles.

(d) Soil and rock samples from each borehole shall be collected in every 1m depth as per standard specifications and be tested to collect all relevant data/ characteristics of soil/rock strata at the authorized laboratory as required for structural design and planning dredging works.

However, the decision of the Authority is final in the above matter.

Note: The Technical Consultant shall prepare detailed estimates and detailed specifications for the geo- technical investigations to be carried out both on land and water area in connection with the preparation of the Detailed Project Report. The estimate and detailed specifications shall be submitted to the Authority for approval. On receiving the approval of the Authority, the Technical Consultant shall invite and process tenders for the geo-technical investigation work on behalf of the Authority. The tendering process shall be done in consultation with the Authority, and the contract for the work shall be awarded by the Technical Consultant with the approval of the Authority. In case the tender notice is published in the newspapers as directed by the Authority, the advertisement cost would be reimbursed by the Authority. All other costs involved in the invitation of tenders and concluding the contract shall be borne by the Technical Consultant.

1.14 Topographic Survey:

To incorporate topographic survey data of TEFR and also further carry on survey, if required in the proposed Port cum Shipbuilding Cluster area. This will basically include the following:

(a) Establishment of reference benchmarks and control points on the terrain.

(b) Cross sections of every 50m wide strips at every 50m along the shoreline for a minimum length of 1km.

(c) Prepare GIS based maps using appropriate scales and drone imagery.

(d) For the intertidal zone within port limits to be utilized for a stack yard is to be surveyed with cross sections of every 50m wide strips.

(e) For Road connectivity to the proposed location from the National Highway with adequate width. For rail connectivity from the site to the nearest railway station at Gudur, with adequate width.

1.15 Bathymetric and Geophysical Survey:

(a) Detailed hydrographic surveys of the proposed Port cum Shipbuilding Cluster area, including its influential areas carried out earlier, shall be provided by the Authority. Any additional survey, if felt necessary, along with the chart be prepared.

(b) Authority shall provide the geophysical survey details (shallow seismic survey) conducted recently for collecting sub-bottom soil data of the areas of dredging required and areas of proposed marine structures, including breakwaters, which can be used for the project.

Note: Based on the Topographic survey and Bathymetric survey, suggest changes required, if any, in the declared Port limits.

1.16 Collection of Meteorological & Oceanographic Data:

(a) To review data collected at TEFR stage and if required collect data on wind, waves, currents etc at site for one or more critical season and also collection of data available from other sources on wave climate and **meteorological parameters for 20 years or more** in accordance with Indian Standard Code of Practice 4651 which will form the basic inputs for planning the Port layout, Shipyard Layout, design of breakwaters & other structures, Wave model studies, Real Time Ship simulation studies etc.

(b) To review data collected during TEFR stage and collect additional data

(c) as required in regard to data on wind, cyclones, waves, tides, storm surges, currents, rainfall, relative humidity, salinity, sea water

temperature, barometric pressure, suspended load and sea bed load etc. which will form the basic inputs for planning the Port layout, design of breakwaters and other marine structures, Wave model studies, study of coastal line changes, siltation studies, Real Time Ship simulation studies etc.

1.17 Numerical Model Studies:

The Consultant shall carry out the under-mentioned model studies as part of the DPR.

(a) Carry out **Real Time Navigational Simulation Studies** for manoeuvring of the design ships in the approach channel and harbour basin for the proposed Port cum Shipbuilding Cluster and finalise the alignment and dimensions of channel and harbour basin based on the findings of the Study.

(b) Carry out **Numerical Model Studies** for firming up break water siting, length and alignment with reference to harbor tranquility, vessel manoeuvrability etc.

(c) **Carry out Berthing and Mooring Simulation Studies** for determining mooring forces: only Computer simulation is required.

(d) Carry out Numerical Model studies for firming up hydrodynamic regime, sediment transport and coastline changes in the influential area of the proposed Port cum Shipbuilding Cluster including estimation of maintenance dredging requirement/ coastal protection works, if any required.

(e) Carry out **Numerical Model Studies for firming up the location of offshore dumping ground** for the disposal of dredged spoil, if any.

(f) Consultant must carry out independent simulation model studies and revalidate the studies mentioned in TEFR

Note: Models shall be calibrated with available field data.

1.18 Traffic Studies & Demand Assessment

(a) Firm up the commodity-wise Traffic Estimates including origin and destination data and Phase-wise projection starting from the year 2028 to 2060, Vessel Trend Analysis, Percentage share of various types and sizes of vessels & average parcel sizes, number of ship calls for various cargo etc.

(b) Traffic mapping for industrial areas of the identified hinterland needs to be done. Type of captive cargo shall be identified and its volume shall be assessed.

(c) The traffic assessment shall also include including tariff and service benchmarking of competing east coast ports

(d) The Consultant shall assess the long-term demand and market potential for shipbuilding, ship-repair, and allied maritime industries, including vessel category-wise demand projections, repair/refit opportunities, export potential, likely anchor shipyard requirements, supply-chain ecosystem assessment, and benchmarking with major domestic and international shipbuilding clusters.

1.19 Port Design: The Consultant shall prepare a Design Basis Report covering design criteria, applicable codes and standards hierarchy, metocean design conditions, geotechnical parameters, vessel parameters, load cases, safety factors, reliability levels and design philosophy for all major components

(a) **Design Vessel:**

As per Traffic Estimate assessed and shipping pattern arrived at, Design Vessel shall be determined for various categories of cargo and used for the planning and design of approach channel, harbour basin and marine structures.

(b) **Port Layout:**

(i) Tentative Port layout shall be prepared by positioning and aligning various components like breakwaters, approach channel with clear dimensions, harbour basin manoeuvring areas (stopping distance and turning basin), berth structures, operational areas, road and rail connectivity etc by firming up the TEFR layout or as layout decided by Authority.

(ii) Planning of layout shall be adaptable for phased development.

(iii) The tentative Port Layout shall be checked through (a)Mathematical Model studies for its adequacy with respect to wave tranquillity and hydrodynamic conditions, (b)Real time Ship Simulation Studies to ensure safe manoeuvring of ships; and (c)Sediment transportation studies to ensure acceptable conditions with respect to shoreline changes and siltation in the channels and harbour basins etc, and incorporate modifications, if any required in the tentative lay out to achieve the acceptable performance and finalise the layout drawings with the approval of the Authority.

(c) **Breakwaters:**

Planning and Design of Breakwaters supported by design calculations, firming up the type of breakwater at different segments, wave flume/ basin tests to check the stability of Breakwater cross sections in a laboratory approved by the Authority, calculation of quantities, source of the materials, methodology of construction and preparation of connected drawings.

(d) **Berth structures:**

Planning and Preliminary Design of berth structures including piles and super structure, reinforcement details, founding level of piles and preparation of connected drawings (longitudinal and cross sections). Preliminary design shall be to the extent required for estimating the quantities for expenditure sanction and inviting bid for the work.

(e) **Navigational Channel, Dredging & Reclamation**

Fixation of keel clearances for design vessels, depths in berth areas, Port basin & manoeuvring areas and approach channel, computation of dredging quantities with supporting calculations, dredging methods, details of reclamation/ dumping grounds by matching the dredge quantity with reclamation quantity for economic optimization etc. The dumping location in the offshore area shall be identified on the basis of hydro dynamic mathematical model studies keeping in view the environmental impact, travel cost of dredgers, percentage material that may find it way back in to the port channel etc. Existing soil characteristics, dredge material

characteristics for reclamation in Port Stack yard area and the suitable ground improvement technique for using the reclaimed area for stackyards be analyzed and provided in the report.

(f) **Aids to Navigation**

The details of all the navigational aids required including, channel marking buoys, leading lights and other safety measures such as fire-fighting plans shall be included.

(g) **Operational areas/ Stackyards:**

The requirement for various facilities like container parking yards, transit sheds, warehouses, open storage areas, liquid cargo storage facilities etc shall be provided as required. Layout of operational areas, stack yards for containers as well as bulk Cargo, ground slots and stack arrangement for containers, design of terminal pavements and foundation for equipments and buildings, receipt and delivery areas for all types of cargo shall be clearly indicated/specified.

(h) **Utilities and Utilities corridor:**

Basic calculations and drawings including general arrangements and typical cross sections of all internal road and intermodal yard, water supply (including quantity and source), electrical power supply (including quantity and source), sewerage, lighting, firefighting and communications shall be included. A separate corridor for these may also be planned taking into consideration future developments.

Consultant shall undertake assessment of existing NIOT seawater intake facility whether the same can co-exist with cluster layout. In case, there is a requirement to shift the same, alternative locations may be proposed.

(i) **Equipment/marine crafts**

(i) Requirements for all equipment shall be assessed and outlined in order that they are able to achieve the planned performance efficiencies and productivities.

(ii) Planning and design of Cargo handling equipment etc including broad specifications, No. of units in each category etc. Suitable

equipment for various categories such as cargo handling, transporting vehicles including AGV, weighing machines, material handling shall be identified.

(iii) Requirement of other equipments like fire-fighting, pollution control devices, EDI, cargo tracking, X ray scanning etc., shall be identified and provided.

(iv) Equipment includes supporting software, operating systems and training. Requirement of tugs, pilot launches and other floating harbour craft for berthing / de-berthing of vessels shall be included.

(j) **Buildings and miscellaneous facilities**

(i) Basic design and drawings of the Port Administrative buildings, employees' amenities including Parking areas and architectural views of main buildings.

(ii) The requirement for various facilities like truck parking, rail siding, tank farms for bunkering, weigh bridges, fuelling stations, repair / maintenance shops, restaurants / canteens, first aid, security and access control, emergency gates, firefighting etc. shall be included

(iii) The Technical Consultant shall also suggest/study development of port complex for residence of port staff and office accommodations for port operators including commercial activities with identification of suitable location.

1.20 Layout for Shipbuilding Cluster:

(a) **Design and Detailing of the Project Facilities**

The Consultant shall prepare detailed shipbuilding cluster layout for optimum usage of land and Master Plan layout for various stages of development. The initial phase development shall be taken up for detailing so as to arrive at the realistic cost estimates.

(b) **Detailed Layout**

The detailed layout of the shipbuilding cluster facilities shall be developed duly showing the navigational channel, maneuvering areas, dry docks, slipway, protection structures, land development, open

and covered storage areas, internal road and rail connectivity, utilities like drainage, sewerage, water supply, electrical power and distribution. Detailed layout of the capacity aligned shipyard covering dry docks/slipways, outfitting berths, workshops, storage/logistics zones etc. conforming to international standards and ensuring optimised material and production flow, operational efficiency shall also be developed.

The cargo flow diagrams to achieve the desired productivity levels shall be prepared duly showing the proposed material handling equipment and conveyors, handling equipment, evacuation routes etc. The required environmental control measures like dust suppression system, green belt etc. shall be provided along with the firefighting measures.

(c) **Design of the Project Components**

On the basis of the selected development plan, all the project components shall be designed to internationally accepted standards and norms, including but not limited to:

(i) **Marine structures:** Detailed designs shall be prepared for all the marine structures and cross sections of wharves / quays including cross sections of the protective structures at different water depths taking into consideration of the subsoil properties.

(ii) **Navigational areas:** The proposed dredged levels in the navigational channel and maneuvering areas with details of dumping locations shall be provided along with the quantity estimates. The material suitable for dredging shall be assessed.

(iii) **Navigational aids:** The details of all the Navigational aids shall be provided.

(iv) **Equipment Requirements:** Equipment for all categories shall be assessed and outlined. Suitable equipment for various categories such as cargo handling, transporting, weighing, material handling, firefighting, shall be identified in order that they are able to achieve the planned performance efficiencies. Equipment includes supporting software, operating systems and training. Requirement of other safety measures such as firefighting plans shall be assessed and included in the report. The OEMs shall be consulted during finalisation of the equipment.

(v) **Onshore facilities and Warehouses:** Architectural planning and design of one shipbuilding cluster administrative building. The shipbuilding cluster building shall contain Officers / staff working cabins / rooms, conference halls, meeting rooms, MEP (Mechanical, Electrical (Split AC in rooms), Plumbing works), lift facilities, firefighting etc. Design of workshop, Transit Sheds and Water Tanks etc. The requirement for various facilities like truck parking, rail siding, weigh bridges, fuelling stations, repair / maintenance shops, restaurants / canteens, first aid, security, emergency gates, firefighting etc. shall be included.

(vi) **Utilities:** The requirements of various utilities such as electricity, water, sewerage / effluent, lighting etc., for the facility at various stages of project life relating to the projected growth in cargo volumes shall be included. Internal infrastructure in the shipbuilding cluster — the details of common internal infrastructure facilities required for development of shipbuilding cluster (initial development) such as:

- Internal roads
- Railway network inside
- Fire station
- Gate
- Fencing
- Compound wall
- Drainage / sewerage
- Water supply for shipbuilding cluster operations staff, water supply for ships, power supply for shipbuilding cluster building, power supply for cargo handling equipment
- Requirement of Electrical Sub Stations, DG sets shall be studied and provided in the DPR.

(vii) **Required External Infrastructure in the shipbuilding cluster:** The details of the following external infrastructure facilities required for development of shipbuilding cluster (initial development) shall be studied and provided in the DPR:

- Water supply
- Power supply
- Telecommunication
- Connectivity by road
- By rail

The Consultant shall carry out the necessary surveys and finalise the nearest source for water supply and power supply required for the shipbuilding cluster including arriving at the cost for the same.

1.21 Connectivity:

(a) Reviewing and firming up of Rail and /or road connectivity proposed in the TEFR in the context of:

(i) Modal Split of cargo through rail/road/water mode.
(ii) No. of Railway sidings and No. of road lanes.
(iii) To Waterway Terminal, without disturbing the existing system, establish adequate transport linkage from nearest Rail/Road/Inland
(iv) Evacuation/ congregation plans for cargo.

(b) The connectivity shall be finalized in consultation with Indian Railways, NHAI and State Authorities.

(c) The Consultant shall assess the adequacy of external road connectivity to the Shipbuilding Cluster for transportation of Over-Dimensional Cargo (ODC) including structural steel plates, heavy marine equipment, propulsion systems, dock components, and prefabricated offshore modules. The assessment shall include:

(i) Route survey of the designated access road(s) from the nearest National/State Highway to the cluster gate, identifying constraints such as insufficient carriageway width, turning radii, vertical clearances, and flyovers/underpasses/utility crossings that restrict ODC movement;

(ii) Load-bearing capacity assessment of bridges, culverts, and grade separators along the approach route in accordance with applicable standards and guidelines to confirm their adequacy for transport of heavy structural components

(iii) Recommendation on the required road geometry (minimum carriageway width, turning radii at cluster gate and major intersections) for unrestricted ODC movement, including escort vehicle requirements and lay-by provisions;

(iv) Identification of stretches requiring widening, strengthening, vertical/horizontal clearance improvements or dedicated heavy-haul bypass corridors

(v) Consultant shall undertake GIS based mapping and spatial analysis of the project area, including land use, environment constraints, infrastructure, and connectivity, including geo-referenced layers to support site planning and project development.

1.22 Land Acquisition:

For the land acquisition process, based on the Port's design the Technical Consultant shall:

(a) Identify the affections on properties for the project including road and rail connectivity:

(b) The Technical Consultant shall identify the affections on private and public properties of the project, according to the available cadastral maps. By means of a photo interpretation (to be complemented by a field survey) the different properties and land uses will be identified using GIS-based cadastral mapping, and measurements of the affections shall be obtained (to match with Revenue records).

(c) Provide a Social Assessment: To identify affected families and to calculate the social impact when land is acquired. Determine cost estimate: Accordingly, and further to the rates of the affections on the different land uses having been established, the cost estimate for the Land Acquisition required by the Project shall be determined.

Note: The assessment of land area to be acquired for Dugarajapatnam Port Development shall conform with the provisions of the latest Land Acquisition Rehabilitation and Resettlement Act, including amendments, if any.

1.23 Project Implementation Schedule

The consultant shall prepare a project implementation schedule covering the major activities and attach as part of the DPR

1.24 Project Risks & Mitigation Strategies

Preliminary identification of project risks, including technical, environmental, regulatory and financial risks, shall be carried out with indicative mitigation strategies

1.25 Project Cost:

The Technical Consultant shall work out the cost for all project components, including equipment, yards, internal roads and utilities, and environmental protection works, with supporting calculations and prepare cost estimates of the project with a breakdown cost for each component separately, with broad specifications. Cost estimating for rail and road connectivity should also be included.

(a) The cost estimates should be based on the schedule of rates/current market rates and/or budgetary quotations. The cost estimates shall be Phase-wise.

(b) To the project cost so arrived at, the Technical Consultant will add provisions for Project Management Consultancy, Contingencies and Administrative Cost on an appropriate percentage basis and lump sum provisions for Physical and Price Contingencies, Interest During construction and other Financing costs, Pre-construction expenses, etc.

(c) As regards project cost for development, provide year-wise phasing of capital expenditure according to the implementation schedule.

(d) The Technical Consultant shall ensure to adopt the market rates with reasonable escalations while preparing the Cost Estimates.

1.26 Tariff and Revenue Estimates

(a) Assumption on tariff in line with competitive tariffs in the regions' ports, similar ports and transshipment terminals, existing regulatory aspects and possible regulatory assumptions in the future shall be provided

(b) A possible tariff structure shall be proposed

(c) Revenue based on proposed tariffs shall be estimated

(d) The tariff structures and revenues shall be independently assessed for port and ship building cluster considering the findings from demand assessment by the consultant

1.27 Financial & Viability Analysis

(a) The Technical Consultant shall provide financial viability analysis of the Project with a view to estimating the likely IRR over a CAPEX recovery period of 30 (thirty) years, 40 (forty) years and 50 (fifty) years, respectively.

(b) The consultant shall carry out the financial and viability assessment independently for port and for ship building and repair cluster taking into account the projected cashflows of both port and ship building and repair cluster.

(c) The financial and viability analysis will take into account:

(i) Project timelines.
(ii) Project capital cost and phasing.
(iii) O& M costs may be assumed as per the norms of the Authority & phasing.
(iv) Traffic forecast.
(v) Traffic Setting
(vi) Revenue computations/year-wise.
(vii) Funding pattern – various options.
(viii) Tax & depreciation.

(d) The Technical Consultant shall:

(i) Calculate the NPV and IRR for the Project independently for both port and ship building and repair cluster. It will undertake sensitivity analysis by identifying the most critical factors and determining their impact on the IRR, including varying project costs and benefits, implementation period, and combinations of these factors.

(ii) The consultant shall review and reconfirm the validity of the project structuring finalised based on the TEFR and modifications, if any required would be specifically brought out for the

consideration of the Authority and finalisation with the consent of competent authority.

Upon completion of each stage of the activity as well as periodical progress reports, shall be provided by the Technical Consultant to the Authority. Further, the Technical Consultant need to give presentations of the progress and every stage activities as required by Authority at the office of Client at Vizag/ Vijayawada/ concerned Ministry at Delhi either physically or through VC as per the requirement.

Part C: Environmental and Social Impact Assessment Studies

1.28 General:

Along with the submission of DPR, the consultant shall prepare and furnish the application with all details for submitting to the concerned authorities for processing for CRZ/environmental clearance, Forest clearance, Wildlife Clearance and Pollution Control Board Consents. The consultant should obtain Environmental Clearance (EC) by going through the steps/ procedures prescribed by MoEF& CC.

The Environmental Clearance process would involve 'Scoping'. Therefore, the application submitted for EC shall include draft (TOR) addressing all relevant environmental concerns for the preparation of an Environment Impact Assessment (EIA) Report in respect of the project. The Consultant shall take follow-up action to ensure that approval for the TOR is obtained in time so that the preparation of the EIA and in turn processing of EC are proceeded and completed as per the approved time schedule.

All details specified in the CRZ notification of 2019, including Disaster Management Report, Risk Assessment Report, Environment Management Plan and CRZ in Mapping in respect of the project shall be prepared and submitted by the authorized agency only, as appointed by consultant at the appropriate time as per the process requirement of EC.

The consultant shall also prepare all documents required for obtaining Forest clearance and Pollution Control Board Consent.

The consultant shall carry out all activities connected with obtaining the afore mentioned clearances and they are obliged to obtain all the clearances on behalf of the Authority. Authority shall extend all assistance on no cost basis. However, the Authority shall make payment towards statutory fee payable by the Authority. In

case the consultant is not an accredited agency of Ministry of Environment and Forest and Climate Change (MoEF& CC) it shall avail the services from the accredited agencies of Ministry of Environment and Forest and Climate Change (MoEF& CC) for conducting studies and connected activities.

1.29 Legal and Policy Framework:

Prior to the implementation of the development project of Dugarajapatnam Port; Environmental Clearances/CRZ Clearances, Forest Clearance and Pollution Control Board Clearance/consent should be materialised.

1.30 Social Impact Assessment:

The Technical Consultant shall undertake a social impact assessment due to the improvements, such as the establishment of Port and Shipbuilding Cluster, Road and Rail connectivity and other related facilities proposed on the Project, especially the persons affected due to the Project and requiring resettlement and rehabilitation. The extant policies and guidelines of the government would be kept in view while undertaking the assessment. The socio-economic study shall be done. The Consultant shall prepare a plan for involuntary resettlement and land acquisition, which shall include the following:

(a) Prepare in accordance with the guidelines of the Government, a draft Resettlement and Land Acquisition Plan;

(b) Prepare area-specific social assessments to support the development of a locally relevant approach to resettlement which provides benefits to people in the Project's area of influence, which include socio-economic conditions, social service infrastructure, and social institutions and organisations, in accordance with the Government policies and guidelines;

(c) These social assessments should include gender and local ethnic aspects;

(d) Provide recommendations and an action plan to undertake at appropriate time, a full census and inventory of lost assets (households, shops and agricultural and other lands, or access to current income-generating activities, including impacts caused by permanent or temporary acquisition) of affected people and a

baseline socio-economic survey of the affected population. Determine the scope and magnitude of likely resettlement and land acquisition effects and list likely losses of households, agricultural lands, business and income opportunities, as well as affected communal assets and public buildings;

(e) In consultation with local stakeholders, government and the Authority, develop an entitlement matrix, on the basis of the consultations, socio-economic surveys, and inventories of losses that will determine the amount of compensation in accordance with the guidelines and policies of the Government;

(f) Prepare the plans with full stakeholder participation, including the Government and the Authority. Consult with affected persons and community-based organizations to ensure that all affected persons have been fully informed of their entitlements through the consultative processes initiated by the Government and the Authority. Ensure that communities and displaced persons understand the project, its impacts, and the responsibilities of the parties;

(g) Analyze and confirm the following aspects that will apply to land acquisition and resettlement in the project area: (i) Laws and regulations, including local practices; (ii) Budgetary processes for involuntary resettlement and land acquisition; (iii) Schedules for these activities that are coordinated with the construction schedule; and (iv) Administrative arrangements and requirements; and

(h) The Technical Consultant shall study other aspects like community-oriented business plan, applicable regulations including safety regulations and compliances associated with handling of various cargo/vessels and other facilities.

1.31 The Technical Consultant shall carry out this Environmental Social Impact Assessment Study, conforming to the requirements of:

(a) EIA 2006 Notification on Environmental Clearance (September 14, 2006) and subsequent amendments.

(b) MoEF& CC's EIA Guidance Manual for Ports and Harbours

(c) International Finance Corporation's (IFC) Performance Standards (Latest Edition).

(d) Coastal Regulation Zone (CRZ) Notification, 2019 issued by MoEF& CC Government of India (GoI).

(e) Environmental, Health and Safety (EHS) Guidelines for Ports, Harbour and Terminals and EHS Guidelines for Construction Materials Extraction.

(f) Clearances as required for road and rail connectivity shall be carried out by the Technical Consultant.

The Comprehensive EIA Report and Social Impact Assessment covering the proposed Port, road and rail connectivity corridors and all other required Port facilities in accordance with Government of India Legislation shall be prepared through MoEF& CC accredited agencies, in order to obtain the required clearances/ approvals from the involved regulatory bodies and Environmental Clearance from MoEF& CC prior to the implementation of the project.

The Comprehensive EIA shall include, but not be limited to:-

(i) Baseline Study and Field Works.
(ii) Environmental inventories (vegetation, wild life .)
(iii) Water resources assessment.
(iv) Social and Economical assessment (livelihood, land use, economic sectors: fisheries, farming, agriculture)
(v) Public Consultation process, Project Description and analysis of Project Components.
(vi) Environmental and Social Impact Evaluation.
(vii) Preventive mitigation and compensatory measures (environmental and social).
(viii) Environmental & Social Management Plan (EMP) and Monitoring Programme.
(ix) Environmental and Social Risk Analysis.
(x) Cost Estimate.
(xi) Conclusions and recommendations.

1.32 The scope of work towards EIA Study also includes:

(a) Carryout the Environmental Impact Assessment studies based on the ToR approved by the MoEF& CC / Authority.

(b) Consulting and obtaining Environmental Clearance from MoEF & CC, State and Central Government level on behalf of the Authority.

(c) Preparing the presentations and attending all the related meetings like CRZ, Public hearing and meeting with MoEF & CC etc.

(d) Any other works/ additional studies ordered by MoEF&CC related to the above Environmental Clearance

(e) Processing and obtaining all other statutory clearances including Forest/ wildlife Clearances and other required clearances, as required for the satisfactory implementation of the Project.

2. Key Personnel for DPR preparation

The Technical Consultant shall form a multi-disciplinary team (the "Consultancy Team") for undertaking this assignment. The following Key Personnel, whose experience and responsibilities are briefly described herein, would be considered for evaluation of the Technical Proposal. Other expertise, such as that required for nautical study, dredging, financial analysis, quantity survey, social impact assessment, etc., for the Project shall be included in the Team either through the Key Personnel specified below or through other Professional Personnel, as necessary.

1	**Team Leader**	
	Educational Qualifications	Graduation with BE/B.Tech in Civil or Mechanical with M Tech/M plan or equivalent from reputed institute.
	Essential Experience	Minimum 15 years of consulting experience across areas of DPR, various Infrastructure Projects for Ports/shipbuilding, Logistics, Transportation, etc. **Number of Projects:** Worked in at least 3 Infrastructure projects related to ports sector.
2	**Infrastructure Planning cum Technical Expert**	
	Educational Qualifications	M.E/M.Tech or M.Plan or MBA in Infrastructure Management or with B.E./B. Tech in Civil

		Engineering or B.Plan/ B. Arch from reputed institute
	Essential Experience	Minimum 10 years' experience in port and terminals business operations, port/shipbuilding clusters planning studies, port facilities development. **Number of Projects:** Worked in at least 2 infrastructure projects
3	**Logistics and Supply Chain Specialist/ Transportation Expert**	
	Educational Qualifications	MBA or M.Tech in Logistics/ Supply Chain Management/Transportation Management with B.E/B.Tech or related field from reputed institute
	Essential Experience	Minimum 8 years of experience in transportation, logistics planning and management or experience in port operations, shipping and freight management. Number of Projects: Worked in at least 1 transportation and logistics planning projects.
4	**Naval Architect**	
	Educational Qualifications	B.E./B.Tech or M.Tech in Naval Architecture and Ship Building/ Ocean Engineering from a recognized university or institution.
	Essential Experience	Minimum 8 years of experience in naval architecture, including ship design, marine structure design, stability analysis, hydrodynamics, port & harbour engineering, or vessel-related technical assessments. **Number of Projects:** Worked in at least 1 Projects pertaining to ship design/ vessel stability analysis, port & harbour engineering studies, dry dock/shipyard planning, maritime DPRs, or large-scale maritime infrastructure project conceptualization & development.
5	**Environment Expert**	
	Educational	Graduation with B.Tech/M.Tech/M.Sc in

	Qualifications	Environmental Science or Chemical engineering or equivalent from reputed institute with specialization in environment studies or related field.
	Essential Experience	Minimum 3 years of consulting experience with at least 3 years' experience of working in Port/ Large Infrastructure projects.
6	**Financial Analyst**	
	Educational Qualifications	Post Graduate in Finance/ Chartered Accountant/CFA or equivalent from reputed institute
	Essential Experience	Minimum 5 years of consulting experience with at least 3 years' experience of working in port, shipping and maritime sector.
7	**Associate**	
	Educational Qualifications	Graduation with BE/B.Tech with M. Plan/PGDM /M.Tech from a reputed institute
	Essential Experience	Minimum 2 years of experience working in port, shipping and maritime sector.