# Section 7. Terms of Reference

## 1. Introduction & Background

1.1 Assam has approximately 1980 km of navigable waterways of which the most important for transport purposes are the Brahmaputra and Barak Rivers. The Brahmaputra River with a length of 891 Km between the Bangladesh Border and Sadiya, was declared National Waterway no. 2 by the Government of India in 1988, the development of its navigation infrastructure thereafter being the responsibility of the Inland Waterways Authority of India (IWAI). IWAI is currently aiming to maintain a navigable depth of 2.5m from Bangladesh Border to Neamati (629 Km), 2.0 m from Neamati – Dibrugarh (139 Km) and 1.5m from Dibrugarh – Sadiya. However, while IWAI is responsible for the navigation 'fairway' it does not own the water resources or have responsibility for operating water transport services. Landside activities such as riparian land-use development are regulated by State or local governments.

1.2. The Brahmaputra, running through the heart of the state of Assam, provides a vital link for both urban and rural ferry services which are the single most important transport mode for many sections of the population, especially rural households in Assam. These ferry services are provided by the Directorate of Inland Waterway Transport Assam, and by country boat operators – typically small independent and informal private businesses. In addition to the 102 ferry service routes designated by the Directorate of IWT, there are numerous routes licensed by the local (village) and district councils. Other users of the river include the Central Inland Water Corporation Limited (a Government of India Undertaking transporting cargo and operating some terminals on the rivers in the Eastern India & North-Eastern India and on the Indo-Bangladesh protocol routes), border security forces, tourist organizations and private operators. Navigation on the Barak River (152 km) is minimal at present, but the river is designated as National Waterway 16 under the National Waterways Bill (2015).

1.3. The Directorate of Inland Waterway Transport Assam, established in 1958 and part of the Assam Transport Department, is responsible for developing, maintaining and regulating IWT services in the state. It also operates and maintains many of the passenger transport services, ferry terminals and navigation aids on both Brahmaputra and Barak Rivers. Headquartered in Guwahati, it has three divisional offices in Guwahati, Dibrugarh and Silchar; five sub-divisional offices in Guwahati, Goalpara, Jorhat, Dibrugarh and Hailakandi; and three commercial offices at Guwahati, Goalpara and Dibrugarh. It also has a Crew training centre at Guwahati. DIWTA currently has a total of about 4,330 regular staff.

1.4. The ferry industry as a whole is characterized by an aging and poorly equipped fleet. Most demand is now met by the informal sector operating traditional country boats without supporting infrastructure. Terminal facilities and navigational aids are insufficient. Most ferry terminals consist of no more than improvised moorings on the bank of the river, which require relocation with changing river conditions, often over substantial distances. In the absence of bank protection, the main ferry terminals in or close to the urban centres (provided with floating, movable steel pontoons and temporary access roads) also typically require frequent relocation as river conditions change across seasons. The cargo sector is small partly because of market circumstances, partly because of connectivity problems and partly because the navigation standards provided do not permit reliable year

round use by large modern vessels that can deliver competitive advantage over other transport modes. The Government of Assam wishes to transform the quality of inland water transport services and integrate high quality passenger and vehicle ferry services, and inland water freight transport into Assam's wider transport network system.

1.5 In the early twentieth century, inland waterways were a significant mode of transport for freight and passengers in India but, as in many countries, the influence first of railways, and then of road motorization, has led to a neglect of IWT. Better utilization of Assam Waterways for mobility-centered economic development is a necessity today.

Development of models for integrated urban transport planning and an infrastructural solution that provides mobility for commuters and goods are required to define and address contextually-sensitive economic growth and urban planning for many cities along Assam Waterways. Development of ferry services at various urban locations viz. Guwahati and Dibrugarh as well as locations in rural areas which are vital to enhance connectivity to the riparian communities dependent on IWT in the state of Assam may largely contribute towards the holistic development of the region.

1.6 Benefits offered by such systems to cities that have historically relied on the Assam Inland Waterways include considerable traffic decongestion, better intermodal connectivity, and economic revitalization of the urban core. Transit-oriented development and optimal use of this river requires coordination with various stakeholders, state governments, municipalities, and private players that will benefit from and contribute to capital improvements that link river-based infrastructure to transportation and logistics systems in the region.

1.7 In order to leverage the benefits of inland water transport, the Government of Assam wishes to transform the quality of inland water transport services and integrate high quality passenger and vehicle ferry services, and inland water freight transport into Assam's wider transport network system. The framework to realize this objective will be established through 2 studies – Institutional Strengthening & Business Planning (ISBP) and Integrated Strategic Development Plan (ISDP). ISBP study will provide the roadmap for creating a more supportive institutional framework to facilitate policy implementation and fulfil capacity building requirements for the new institutional setup.

ISDP study intends to review, assess the overall transport sector in Assam and prepare transport strategy to help the Government of Assam to use it for comprehensive and integrated transport solution in the State as well as guide the sustainable development of the inland water transport sector in Assam till 2035. As an outcome of these two studies, large scale engineering infrastructure will be identified and executed in order transform inland water transport in Assam.

1.8 The use of large-scale engineering infrastructure such as the above can be leveraged to maximise impact by integrating strategic planning and design-based inputs that respond to urban and rural needs, world class transportation-related public amenities and terminals, riverfront development, tourism, small-scale cargo movement, marketing campaigns etc. to boost usage and revenue.

1.9. It is necessary to devise planning and design of ferry terminals integrated with governance and licensing frameworks that define opportunities to partner public and private

initiatives in commercial transport operations and ancillary commercial development pertaining to transit-oriented usage of the river.

1.10 The Government of Assam has applied for World Bank loan assistance to implement its project for (i) Developing Long Term Strategic Plan for IWT in Assam and Institutional and Capacity Development and (ii) Improvement in Ferry Services. Part of these funds shall be made available to undertake a Project Preparatory and Definition Study to identify the particular linkages of possible riverine ferry systems within the specific regulatory, planning, and investment framework and carry out Detailed Project Report to enhance transport connectivity to the communities and regions that are dependent on the inland waterways, address the challenges outlined in 1.4, and facilitate modal shift to the waterways.

1.11 Accordingly, AIWTDS plans to engage consultants to investigate the strategic planning and design, as well as the technical, economic and financial feasibility of ferry service infrastructure development and operations in the state of Assam. The Work shall include selection of best locations within the specific regulatory, planning, and investment framework of transit points in the state, design development, preparation of DPR and procurement strategy.

1.12 A separate study for development of Integrated Strategic Development Plan for the state of Assam has been initiated by AIWTDS. The objective of this study is: (a) review, assess the overall transport sector in Assam and prepare transport strategy to help the Govt. to use it for comprehensive and integrated transport solution in the State and (b) guide the sustainable development of the inland water transport sector in India's Assam State till 2035. This will include a vision for the IWT sector development till 2035 and the physical investments (whether from public or private sources), of which a feasibility study will be prepared for activities to be financed under the scope of the Assam Inland Water Transport (IWT) Project.

As part of the study, ISDP consultant is mandated to conduct a study to select technocommercially feasible locations for modernization/improvement works from a list of 10 pre-selected existing ghats/terminals and new IWT facilities within the state of Assam that are to be developed to enhance regional connectivity. A second separate but parallel consultancy will complete Environmental Assessment (EA) studies for the project, including a detailed Environmental Impact Assessment (EIA) for all activities included in the DPRs to be developed under this project, as well as an Environmental Management Framework (EMF) & Social Management Framework (SMF) to outline general types of likely / anticipated environmental issues, impacts and management measures, and the process to be followed to complete full detailed EIAs/EMPs, for all different categories and types of investment subprojects which may be taken up by AIWTDS during the course of the World Bank financed investment project.

It is also essential to note that the same separate consulting firm (EIA firm) will conduct detailed Social Impact Assessment (SIA), site-specific SMPs, Resettlement Action Plans (RAPs), as well as a stand-alone Resettlement Policy Framework (RPF) for all investment activities. The SIA will run concurrently with the design study but willindependently evaluate their social aspects including land acquisition and resettlement.
The detailed SIA is expected to inform the final design of the ferry services, including alignments details of the ghats and other facilities. A Resettlement Action Plan (s) (RAPs), will be carried out at project design stage, after the SIA found to involve land/asset acquisition.

The DPR Consultant will be required to pro-actively plan and share information with the EIA and SIA consultants that would help preparation of the detailed environmental and social safeguards studies.
The figure below presents tentative plan for both social safeguards studies and technical design preparation.

| Tasks | By | April - 18 | May - 18 | June -18 to July -18 | July -18 to Nov - 18 | Dec – 18 | Jan - 19 |
|---|---|---|---|---|---|---|---|
| Strategic Development Plan | ISDP Consultant (Separate) | | | | | | |
| Design/DPR Study | Design consultant (Separate) | | | | | | |
| SIA/EIA studies | SIA/EIA Consultant (Separate) | | | | | | |
| RAP | RAP/SIA Consultant | | | | | | |
| Stakeholder consultation | Design/SIA/EIA | | | | | | |
| Clearance | WB | | | | | | |

## 2. Objective of this Assignment

2.1 The assignment under this TOR is divided into following 2 modules, as follows:

**A.** Review/ Assess the outputs provided by ISDP Consultant on feasible IWT investments under Assam IWT Project as they are made available, for development works amounting to approx. US $100 million. Outputs from ISDP are expected as follows:

i. An early feasibility assessment of locations for passenger (including cargo) ferry terminals from a list of 10 pre-selected existing ghats /terminals as stated.

ii. Complete feasibility report on strategic IWT investments under the project the Consultant would prepare a Detailed Project Report (DPR), Front End Engineering Design (FEED) and tender document for each of the validated feasible locations identified by the ISDP Consultant in 2.1-A(i) and 2.1-A(ii) above for developing modern IWT infrastructure - primarily the passenger (including those with cargo facilities) ferry terminals with all associated facilities including user access.

**B.** Modularization of design elements for passenger (and cargo) ferry terminals for both high traffic and low traffic locations & development of customizable design models for future interventions, based on the potential traffic and the number of vessels that needs to be berthed at the terminal. Different types of last mile connectivity /accessibility solutions should be included with the design models of terminals depending on the location and river bank terrain, and capturing the best international models as well as innovative

solutions available locally. It should include 5-6 standard designs for fixed and floating components for terminals in the rural country side using local materials and techniques. Passenger facilities are the focus, but considerations should be made to accompanying cargo facilities, to accommodate trade flows.

Module A shall commence immediately upon receiving relevant inputs from ISDP study. Module B shall commence after the submission of Draft report of Module A.

## 3. Cooperation with Other Consultants, Methodology and Standards

3.1 The Consultants are expected to work in a cooperative, transparent and harmonized manner with other parties selected to undertake ISDP as well as EIA/SIA Studies and other works to ensure that ultimately, the IWT infrastructure in the proposed locations can be adequately enhanced to achieve the envisaged objectives as well as minimizing adverse environmental and social impacts.

3.2 The Consultant shall, be responsible for evolving an appropriate methodology in accordance with relevant industry standards, shall undertake all fieldwork and ensure that all data is quality assured and corrected wherever appropriate. The Consultant shall keep a record of all information collected and present this in a manner that allows statistical comparisons to be made. Qualitative or Quantitative assessments must be backed up by case studies and relevant industry examples.

3.3 The Consultant shall, for the purposes of this study, take into account all recognized standards, guidance notes and codes of practice as required in accordance with Indian Law and as recognized internationally.

This shall include guidance notes and recommendations as published by PIANC, a nonprofit international organization responsible for: dealing with both broad and very specific navigation sustainability and environmental and social risk-related issues; as well as World Bank Environmental and Social Safeguard Policies and Environmental, Health and Safety (EHS) Guidelines.

## 4. Scope of Work

The broad scope of work for the project shall include but not limited to the following:

4.1 **Module A - Prepare Detailed Project Report (DPR), Front End Engineering Design (FEED) and tender document (as per World Bank guidelines) for development works amounting to approx. US $100 million, selected based on assessment of output provided by ISDP Consultant.**

The Consultant, in discussion with the Client, World Bank and in coordination with ISDP consultant shall prepare DPR, FEED and tender documents for each of the validated feasible locations in developing modern IWT infrastructure -primarily the passenger (including those with cargo facilities) ferry terminals with all associated facilities including user access. Feasible locations shall include -Terminals from a list of 10 pre-selected existing ferry ghats/terminals identified initially and Additional passenger (and cargo) ferry terminals in rural and urban areas as identified in the feasibility study ( ISDP) for Assam IWT project.

Module A will involve the following tasks which would need to be carried out:

**Task 1 - Detailed Design, Engineering & Preparation of DPR**

**Task 2 - Preparation of Bid Document**

**Task 3 - Draft TOR for TSSC for Supervision of Works**

The detailed scope of work for each of the tasks are as elaborated below

**Task 1- Detailed Design, Engineering & Preparation of DPR**

4.1.1. The Consultant will assess all relevant earlier reports. This will enable him/her to have a brief primary idea of the geomorphological and other conditions affecting development works. The detailing / conclusions of these reports are for reference only and the consultant shall obtain his/her own independent data to arrive at any suggestions / conclusion for developmental components.

4.1.2. The Consultant will undertake all necessary detailed Topographical /Hydrographical survey and Geo-technical/Geological investigation at/between proposed ferry locations and analyze the data for the purpose of design of proposed structures as per standard/prevailing guidelines.

The hydrographical survey data collection will include identification and detailing of all such features which may affect river navigation including but not limited to survey and data collection / data acquisition of tidal , topographic, bathymetric, flow and discharge conditions, water level variations, soil (suspended sediment, bed and bank) conditions, geological, geomorphologic and all other conditions. The consultant shall also consider data collection for variation in sediment transport (size and quantity) sources of sediments, locate degrading, aggrading, and stable reaches and correlate these results with historical data and / or previous study reports to qualitatively analyze the effects of anticipated project features. This information shall be used to determine what may or may not work when designing navigation improvements and evaluation of dredging requirement (if any). It shall include a determination of those reaches that are stable in depth and width and thus provide the basis for all subsequent works to be taken up.

Further, the consultant may also need to:

4.1.2.1. For any "fixed" infrastructure proposed to be constructed at any of the terminal locations, if applicable (such as spurs, breakwaters, revetments, embankments etc.), carry out hydrological and morphological modeling by using all the data set collected by the consultant of the potential effects both at the terminal site as well as downstream of terminal construction, in particular with respect to erosion and accretion patterns. The modeling should also consider potential climate change scenarios which may affect future high and low flow rates and also frequency and intensity of extreme events.

4.1.3. Site selection of the proposed locations along with all details for land/asset acquisition and livelihood impacts, including ownership and estimated cost of land. This will include all details and permissions to be collected from the State Revenue Departments with adequate background papers indicating Government and private/communal land. This will also include land for Main Structures & Ancillary works as well as for road connectivity.

4.1.4. Preparation of detailed layout plan to include facilities for both conventional and state of the art model including provisions for berthing, boarding & de-boarding of passengers/loading & unloading of cargo, bank protection, navigation aids, terminal complex with required facilities i.e. waiting area, shop, food court, washroom, ticket counter, approach road to terminal connecting nearby main road, water supply, electricity supply, firefighting including lighting, requirement of power, water supply, emergency and standby power supply, provision of solar power, communication system, Drainage & Sewerage system, boundary wall, fencing, nearby area development, land development plan, cargo handling equipment.

4.1.5. Provide Front end Engineering and design, drawings, technical specifications, bill of quantities (BOQ) and cost estimates for all structures (including ancillary works, road connectivity etc.) involved in development/ modernization of the proposed locations for executing the work. AIWTDS should be consulted adequately during the process of designing of the structures and the designs & drawings are to be vetted by the Proof Consultant (refer to 4.1.7) prior to finalization. Where possible, resource and energy efficiency considerations should be reflected in the designs.

4.1.6. Every cost estimate made shall be duly supported by the justifications for the rates adopted/basis of rates like APWD/CPWD schedule of rates/market rates/ lowest budgetary offers received etc.

4.1.7. Proof checking of design through IITs/ independent agencies (Proof Consultant) of repute approved by AIWTDS before submission to AIWTDS. The proof checking authority shall endorse on the drawings itself and the basic assumptions adopted in the design process. 4.1.8. Preparation of realistic construction schedule for the proposed locations indicating the sequence of activities duly considering the river characteristics in different seasons and priority of works. The phasing of expenditure is also to be worked out.

4.1.9. Suggest institutional mechanism for project preparation, approval and execution of this project without time and cost overrun.

4.1.10. Work out cost benefit analysis, Financial Internal Rate of Return (FIRR) and Economic Internal Rate of Return (EIRR) of the project based on current Indian/International norms including SWOT analysis, as well as consideration of environmental and social costs and benefits, with detailed back up calculations, basis, assumption, justification etc. alongwith their source of information.

**Task 2 – Preparation of Bid Document**

4.1.11. Preparation of bid documents in adherence to the World Bank's Guidelines: Goods, works and non-consulting services [under IBRD loans and IDA Credits & Grants] for World Bank borrowers January 2011 [revised July 2014] for execution of all the works and provide all necessary technical details etc. which will be needed to float and accept the tender on EPC (Engineering Procurement Construction) /DBB (Design Bid Build) / BOQ (as found appropriate in consultation with AIWTDS and merits of the case) contract basis. Accordingly, the detailed designs and cost estimates of every component and sub-component of the DPR will have all such details, authenticity and back up documents

which are required for preparing and processing proposals as per prevailing norms and practice. The Consultant shall also assist AIWTDS with tendering of works, if required.

4.1.12. Suggest suitable method of implementing the project including phasing, time frame and source of funds for implementation of each project group, specifically as to whether the project group components can be implemented under EPC mode and if yes, give all necessary details for implementing the individual project groups on EPC mode including evaluation of EPC bids, checking of selected EPC contractor's design and drawings etc.

4.1.13. Bid document, including allied components, related to the complete scope of work mentioned in this section are to be grouped such that each project group is also logical. The final decision on contractual modality for each individual project group shall be in consultation with AIWTDS & World Bank.

4.1.14. Full integration of Environment Management Plan including proposed mitigation and enhancement measures (to be prepared under the parallel EA consultancy) into the designs, cost estimates and bidding documents

4.1.15. Full integration of Social Management Plan, Indigenous Peoples Development Plan, Resettlement Action Plan, Labor Influx Mitigation Plan, including proposed measures to be prepared under the parallel Social Assessment consultancy into the design and bidding documents.

**Task 3 – Appointment of TSSC for Supervision of Works**

4.1.16. In this regard, the consultant shall provide a detailed terms of reference (ToR) for appointing a Technical Services and Supervision Consultant (TSSC) firm to monitor quality, cost & time over run and environmental supervision aspects of different project packages under Module A. The TSSC would act on behalf of AIWTDS to implement the project, shall carry out necessary checks on all aspects of contract of construction and submit fortnightly reports. The TSSC shall also check the quality of work done and certify the correctness of bill progressed by the contractor for payment by AIWTDS. The consultant shall submit Detailed Project Report (DPR) along with complete tender documents to undertake the construction work and give PowerPoint presentation of Detailed Project Report to Project Management Unit (PMU) of AIWTDS at its HQ in Guwahati. Draft design (Detailed Project Report (DPR) needs to be shared with stakeholders for their information and feedback.

Subsequent to Detailed Project Report, the consultant shall also provide details/clarifications required by AIWTDS, if any.

4.2 **ModuleB: Modularization of design elements for passenger (and cargo) ferry terminals & development of customizable design models for future interventions**

The detailed scope of work for Module B is as follows:
4.2.1 Based on the works completed in Module A, identify elements of passenger **(and cargo)** ferry terminal (both on the riverside and landside) which can be standardized into elements of a typical fixed/floating passenger **(and cargo)** ferry terminal, taking into account the river characteristics and the need to provide connectivity to communities and

large population clusters dependent on river transport. The design elements may include but not be limited to buildings, jetty, approach trestle etc. and their standardization should be done to allow for low-cost, replicable and locally achievable solutions. The selection of elements should be supported with appropriate justifications, which needs to be shared with the client.

4.2.2 Prepare detailed design, BOQ, cost estimates and technical specifications for the design elements selected in 4.2.1. Five to six sets of model designs of fixed and floating components should be prepared for each of the design elements - in both high volume traffic and low traffic categories. Considering these terminals design templates to be used predominantly in the rural countryside, use of local materials and techniques needs to be encouraged.

The consultant shall provide appropriate inputs for modularization/standardization to be included in tender documents.

4.2.3 The consultant shall also incorporate good practices in environmentally sustainable and climate resilient terminal design in Modular designs. The models are to be prepared with a view of standardizing the design of the selected elements of passenger **(and cargo)** ferry terminals. The design models should be easily customized based on the site specific requirements and used for future interventions in passenger **(and cargo)** ferry terminals for Assam IWT sector.

**5. Deliverables & Timelines**

It is envisaged that the study will be undertaken in accordance with the following timetable and deliverables:

| Activities | Time period from Contract Signoff (in Months) |
|---|---|
| **Module A** | |
| Inception Report (3 copies) | 0.5 |
| Interim Report/ Survey Report &Workshop with Stakeholders | 2 |
| Draft Project Report (5 copies), draft tender document and presentation of draft report for development work of first set of projects amounting to US $ 25 Million | 3 |
| Final Detailed Project Report (10 copies) and tender documents after incorporating comments of AIWTDS on draft DPR and draft tender documents for development work of first set of projects amounting to US $ 25 Million & Workshop with Stakeholders | 3.5 |
| Draft Project Report (5 copies), draft tender document and presentation of draft report for development work of second set of projects amounting to US $ 25 Million | 4 |
| Final Detailed Project Report (10 copies) and tender documents after incorporating comments of AIWTDS on draft DPR and draft tender documents for development work of second set of projects amounting to US $ 25 Million & Workshop with Stakeholders | 4.5 |
| Draft Project Report (5 copies), draft tender document and presentation of draft report for remaining development work amounting to US $ 50 Million | 6 |
| Final Detailed Project Report (10 copies) and tender documents after incorporating comments of AIWTDS on draft DPR and draft tender documents for remaining development work amounting to US $ 50 Million & Workshop with Stakeholders | 7 |
| **Module B** | |
| Identification of elements for modularization after consultation with AIWTDS | 7 |
| Final Design Documents of elements including detailed design, BOQ, cost estimates and technical specifications &Workshop with Stakeholders | 9 |

The details of the deliverables mentioned in the table are given below:
(i) Inception Report to consist of reports and details of all studies and data collection, analysis of data, reconnaissance survey of proposed locations, time lines for completion of project with proposed methodology and any other information, theconsultant may like to include.

(ii) Interim Report/ Survey Report shall contain status of survey, geotechnical investigation, assessment of existing structures, assessment of proposed modifications to meet requirements and clearances required.

(iii) Draft Project Report shall be prepared as per scope of work and TORs along with detailed design and drawings duly vetted by the concerned departments, estimate and draft tender document on EPC concept for the work. The Draft Project Report should address the comments of the Client on the Inception Report.

(iv) Final Detailed Project Report (DPR) shall be prepared as per scope of work and TOR, along with detailed design and drawings, detailed specifications, estimate, final grouped

tender for inviting bids on EPC concept basis for the work. The Final DPR should address the comments of the Client on the Draft Project Report apart from the ten (10) hard copies and two (2) soft copies of final DPRs shall also be submitted to AIWTDS.

(v) Draft Design, BOQ, Technical Specifications and Cost estimates (5 hard copies) as per scope of work for comments of Client.

If at any stage mentioned above, the Consultant apprehends delay in the submission of any stage report, they shall at least a fortnight in advance, seek time extension on sufficient grounds, for the reasons beyond the control of the consultant, which would be without any additional financial implications to the Employer. If the delay is caused beyond the extended period if any, or if the progress/services are unsatisfactory the Employer shall have the right to terminate the contract and be entitled to employ and pay other agencies/consultants (new) to carry out the work at the risk and cost of original consultant and all expenses consequent thereon or incidental thereto shall be recoverable from the consultants by the Employer and will be deducted from any dues or which may become due to the consultants.

## 6. Key Personnel & Experience Requirements

The Consultancy Team shall consist of the Professional Staff (The "Key Personnel") who shall discharge their respective responsibilities to deliver the overall scope of work of this Tender and Deliverables outlined as above. Consultants will provide a team of experts and support team to complete the assignment with high quality standards

| No. | Key Expert | Minimum Qualification | Relevant Experience |
|---|---|---|---|
| 1 | Team Leader (Strategic Planning and Design) | • Planning and Design Expert (Urban, Regional, Infrastructural Planning and | 20+ Years, 10 as Master Plan Lead |

| No. | Key Expert | Minimum Qualification | Relevant Experience |
|---|---|---|---|
| | | Architecture), MCP or equivalent.<br>• Should have successfully completed 2 projects of similar nature. | |
| 2 | Structural Engineer (Port and Harbour Engineering) | • BE / B Tech (Civil) & M.Tech Structures | 15 Years |
| 3 | Port Planning Consultant | • ME or MSc or equivalent | 15 Years |
| 4 | Hydrographer | • IHO Cat A, IHO Cat B courses or Bachelor of Engineering<br>• Should have successfully completed 2 projects of similar nature. | 15 years in Hydrography |
| 5 | Procurement Specialist | • BE (Civil) | 15 years |
| 6 | Hydrologist | • B.E. / B. Tech (Civil) and M. Tech (Civil) with Specialization in Hydrology<br>• Should have successfully completed 2 projects of similar nature. | 15 Years |
| 7 | Architect | • Masters in Architecture | 10 Years |
| 8 | Environmental Specialist | • ME or MS with specialization in Environment or equivalent | 15 Years |
| 9 | Legal Specialist | • LLB, Masters in Law | 10 years |
| 10 | Social Development Specialist | • MA or MS, or equivalent | 10 Years |

**7. The Obligations of the Consultant.**

The Consultant shall make his own arrangements for all living accommodation, transportation, personal equipment such as computer or lap top and stationery. The nominated Team Leader will be expected to spend the majority of the assignment on location in Assam. All reports, minutes of meetings etc. shall be drafted by the Consultant. Circulation thereof shall be done by the AIWTDS.

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