



**República Democrática de Timor Leste
Ministério das Infra-Estruturas
Project Management Unit**

**Invitation for Submission of Expression of Interest for
the Consulting Services for the Feasibility Study, Design and Supervision of
the Proposed Loan for Road Network Upgrading (Sector) Project**

Country : **Democratic Republic of Timor Leste**

Title of Proposed Project

Road Network Upgrading (Sector) Project
Proposed Project ADB Loan (45094) – TIM

Implementing Agency

Ministry of Infrastructure (MOI)

Brief Description of the Road Upgrading Program

The Government of the Democratic Republic of Timor Leste (GoTL), with the assistance of proposed loans from the Asian Development Bank (ADB) intends to finance the cost of the Road Network Upgrading (Sector) Project (RNUP). Part of this proposed loan will be used for financing Consulting Services for the Feasibility Study, Design and Supervision of roads from Dili to Liquica (29kms), from Tibar to Ermera (45kms) and Manatuto to Natarbora (81kms) which proposed as core subprojects.

The consulting services will be required to do the feasibility study and detailed design of road from Manatuto to Natarbora, and construction supervision of roads from Dili to Liquica and Tibar to Ermera. The road upgrading works will include earthworks including widening, retaining structures, drainages, bridges and pavements.

In order to expedite implementation of the civil works, ADB approved advance action for procurement of civil works and consultants services on 28 September 2011. It is expected that the consulting services to start by second quarter of 2012.

The Ministry of Finance will be the Executing Agency (EA) and the Ministry of Infrastructure (Mol) will be the implementing agency (IA). During the services, the Consultant will embed selected personnel from the Mol to receive training, experience and capacity building in the design and management of road construction projects. For all project activities, the Consultant will report to Mol through the Project Management Unit (PMU)

Consulting Services

The technical specialist requirement, a total of 368 person-months (166 international and 202 national) of consulting services will be initially required for the Consulting Services for the Feasibility Study, Design and Supervision. The complete terms of reference for the consulting services is attached for ready reference.

Mol will select a firm of consultants following quality and cost based selection process in accordance with ADB's *Guidelines on the Use of Consultants* (2010, as amended from time to time). The consultants services will be financed by ADB and the civil works will be jointly financed by ADB and GoTL.

Objective and Key tasks

The feasibility and design services relate to the upgrading of the road from Manatuto to Natarbora. In its Strategic Development Plan (2011-2013), GoTL has identified provision of upgraded north to south links as essential for integrated national development. All north south links are currently in very poor condition and development of the south coast is suppressed. The GoTL wishes to upgrade the road to all weather, asphalt surfaced standard that will enable it to carry 20 – foot container trucks as a minimum. The existing road length is approximately 81kms, traversing flat to rolling terrain in the north before sharply ascending the mountainous spine of Timor Leste. It then passes through mountainous terrain before descending to the coastal plain in the south. The route is sparsely populated. The road from Laclubar junction to Laclubar (approximately 10kms) is also included in the scope of the studies.

A feasibility study will be prepared that will fully inform GoTL and ADB on the engineering, economic, environmental and social aspects of upgrading the road. Economic analyses of (i) the project as a whole, (ii) from Manatuto to Laclubar, and (iii) from Laclubar turnoff to Natarbora will be separately

prepared. Associated tasks comprise but are not necessarily limited to the feasibility works is detailed in the attached ToR.

Detailed engineering design will be prepared for the whole length of the road from Manatuto to Natarbora, and for the feeder road to Laclubar. However, it is envisaged that in order to expedite the work, it will be packaged into two or more contracts for construction purposes. Designs shall be based on national standards where these have been promulgated, or exist in draft form. Similarly, specifications shall be based on MoI's draft specifications for road and bridge works. These standards and specifications shall be reviewed by the design team and project specific amendments incorporated as required and agreed by MoI. Detailed design activities, shall to the extent possible be integrated with those associated with the feasibility studies.

Contract management and construction supervision services shall be provided for (i) upgrading of the road from Dili to Liquica (DL- 29kms) and (ii) upgrading of the road from Tibar to Ermera (TE-45kms). Services to be provided during the construction phase are detailed in the attached ToR.

The Defects Notification Period will be 2 years. The Engineer or his delegate will conduct an inspection of the works after a year and on the expiry of the Defects Notification Period. The Engineer will provide a report outlining any actions to be taken pursuant to the construction contract and issue such notices as may be necessary. The consultant should allow for two site visits of one week and two weeks for these activities respectively and for each civil works contract. During the second visit, the Engineer or his delegate will gather such data as may be needed to agree on the contractors final statement and to process the final payment certificate. The consultant shall allow one week in the home office for processing the final payment certificate.

Implementation Period of the Project

The consulting services are expected to be implemented over a period of about five (5) years with a tentative commencement in the second quarter of 2012.

The MOI, through the PMU now invites eligible international firms in joint venture or in association with national consulting firms to submit their

expressions of interest (EOI) using the attached standard form and relevant documents meeting the following criteria:

- i. Experience related to the transport sector in Asia and the Pacific region, and preferably in Timor Leste. Technical expertise particularly related to roads involving feasibility studies, design, supervision, and project monitoring and evaluation. Extensive experience in developing countries is desirable; and
- ii. Familiarity with the policies and guidelines of ADB, as well as those of the Government of Timor Leste.

Interested consulting firms must provide information indicating that they are qualified to perform the services (company profile, brochures, descriptions of similar assignments, experience in similar conditions, availability of appropriate skill among staff, etc). The consulting firms may associate with other international and national firms to enhance their qualifications.

The deadline for the submission of EOI is 3:00 PM on **05 January 2012** to the address given below. All firms will be advised of the result of their expressions of interest. Only consulting firms that have been shortlisted will be invited to submit a proposal for the project's consulting services. The names and addresses of shortlisted firms will be published in the ADB website.

Additional information of the project can be obtained from the PMU at the address given below during working hours from 10:00 to 17:00 (Monday to Friday). The PMU would try to provide expeditiously the additional information requested but any delay in providing you with such additional information will not be considered as a reason for extending the deadline for submission of EOI.

Address for submitting EOI

Ministry of Infrastructure
Project Management Unit
Avenida Martires da Patria
Dili, Timor-Leste

Attention : Mr. Fernando da Rosa
Project and Finance Manager
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TERMS OF REFERENCE

Road Network Upgrading (Sector) Project

Consulting Services: Preparation of Feasibility Study, Designs and Construction Supervision

I. INTRODUCTION

1. The Government of the Democratic Republic of Timor Leste (GoTL) intends to seek loans from the Asian Development Bank (ADB) which will be applied to financing the cost of rehabilitating and upgrading priority sections of the sealed road network (the Project). Consultants' services will be required to undertake (i) feasibility studies, detailed engineering design and bid documentation, and (ii) construction supervision and contract management. Approximately 39 international person months of international specialist and 22 person months of national specialist inputs will be required for the feasibility study and detailed engineering design services. Approximately 127 person months of international and 180 person months of domestic specialist inputs will be required for construction supervision and contract management. GoTL will select a firm of consultants following quality and cost based selection process in accordance with ADB's *Guidelines on the Use of Consultants* (2010, as amended from time to time). The consultants services will be financed by ADB and the civil works will be jointly financed by ADB and GoTL. The Ministry of Finance will be the Executing Agency (EA) and the Ministry of Infrastructure (Mol) will be the implementing agency (IA). During the services, the Consultant will embed selected personnel from the Mol to receive training, experience and capacity building in the design and management of road construction projects. For all project activities, the Consultant will report to Mol through the Project Management Unit (PMU)

II. FEASIBILITY AND DETAILED DESIGN SERVICES

2. The feasibility and design services relate to the upgrading of the road from Manatuto to Natarbora. In its Strategic Development Plan (2011-2013), GoTL has identified provision of upgraded north to south links as essential for integrated national development. All north south links are currently in very poor condition and development of the south coast is suppressed. The GoTL wishes to upgrade the road to all weather, asphalt surfaced standard that will enable it to carry 20 – foot container trucks as a minimum. The existing road length is approximately 81kms, traversing flat to rolling terrain in the north before sharply ascending the mountainous spine of Timor Leste. It then passes through mountainous terrain before descending to the coastal plain in the south. The route is sparsely populated. The road from Laclubar junction to Laclubar (approximately 10kms) is also included in the scope of the studies.

A. Feasibility Study

1. Scope of Feasibility Study

3. A feasibility study will be prepared that will fully inform GoTL and ADB on the engineering, economic, environmental and social aspects of upgrading the road. Economic analyses of (i) the project as a whole, (ii) from Manatuto to Laclubar, and (iii) from Laclubar

turnoff to Natarbora will be separately prepared. Associated tasks comprise but are not necessarily limited to:

- (i) Social analysis of the Project area of influence to determine numbers of beneficiaries and socio-economic profiles. Assessment of suppressed demand if any for road transport services.
- (ii) Field surveys of the road, including preliminary topographic, pavement, drainage and structures. Preliminary assessment of slope stability and identification of options for mitigation of existing instability and areas of potential instability which may result from upgrading.
- (iii) Undertaking of traffic surveys. Preparation of traffic forecasts taking into account existing and proposed developments in the project area of influence as well as any findings related to suppressed demand.
- (iv) Determination of sources of construction materials including potential quarry sites (including verification of material quality) for pavement materials.
- (v) Estimation of the incremental cost of incorporating measures to accommodate forecast changes in climate characteristics in the project.
- (vi) Preparation of preliminary designs and cost estimates for upgrading options, including varying carriageway and shoulder configurations
- (vii) Preparation of an economic evaluation of the proposed road upgrading options following ADB's Guidelines for Economic Analysis of Projects, including switching value calculations, sensitivity analysis for variations in key parameters and budget constraints. Undertake risk analysis in accordance with ADB's Handbook for Integrating Risk Analysis of Projects
- (viii) Based on the economic analysis, estimation of the expected distribution of project net benefits among freight transport users, passenger transport users, labour, the government and the economy in general.
- (ix) Assessment of land acquisition and resettlement needs in accordance with the Resettlement Framework (RF) (prepared by others) and prepare a resettlement plan (RP).
- (x) Preparation of an initial poverty and social assessment and screening for resettlement impact and indigenous peoples issues in line with ADB guidelines.
- (xi) Assessment of potential environmental impacts in accordance with the Environmental Assessment Review Framework(EARF)

2. Composition and inputs of the Feasibility Study Team

4. The feasibility team shall comprise the following members. The detailed tasks assigned to each team member are not necessarily limited to those listed.

5. **Transport Economist (International):** The Transport Economist (2.5 person months) will lead the Feasibility Study activities and will have at least 12 years experience in

assessing the economic feasibility of road upgrading projects in developing countries, with not less than 5 years as a team leader. The Transport Economist will perform the following tasks:

- (i) Lead the feasibility study task team. Ensure all deliverables are prepared in accordance with quality and time constraints.
- (ii) Research and review data, including that associated with planned government or private development in the area of influence of the road and incorporate in the economic analysis as appropriate.
- (iii) Determine financial and economic vehicle operating costs for representative vehicle types.
- (iv) Prepare an economic evaluation of the proposed road upgrading options following ADB's Guidelines for the Economic Analysis of Projects. Reduction in travel time and transport costs, cost of accidents, increased agricultural production and other net social benefits arising from the project will be taken into account.
- (v) Identify the cost benefits of climate change adaptation options and provide recommendations based on most cost effective measures.
- (vi) Undertake switching value calculations and sensitivity analysis for variations in key parameters and budget constraints. Undertake risk analysis in accordance with ADB's Handbook for Integrating Risk Analysis of Projects.
- (vii) Analyze how limited access to transportation services contributes to poverty in the project area of influence.
- (viii) Based on the economic analysis, estimate the expected distribution of project net benefits among freight transport users, passenger transport users, vehicle owners, labour and the government.
- (ix) Prepare feasibility reports for submission to the Mol. The report should be prepared following ADB guidelines, taking into account direct and indirect impacts during pre-construction, construction and operation, and of implementing mitigation measures and monitoring plans.

6. Road Design Engineer (International): The Road Design Engineer (2.5 person-months) will be responsible for the preliminary designs underpinning the feasibility studies. The Road Design Engineer will be a professionally qualified engineer with at least 12 years relevant experience, including experience in developing countries. The Road Design Engineer will perform the following tasks:

- (i) Review available engineering data, including any data relating to availability and quality of construction materials.
- (ii) Identify potential future climate change impacts that should be catered for design of the road and evaluate costs associated with incorporation of adaptation measures in the project design. Assess recommendations and inputs from the Drainage Engineer

and Environment Specialist for other potential adaptation measures which could be incorporated into the design.

- (iii) Guide topographic and other preliminary physical surveys.
- (iv) On the basis of projected traffic levels, determine cost effective options for upgrading the road taking into account varying terrain characteristics along the route, and minimum serviceability standards.
- (v) In conjunction with the Geotechnical Engineer, survey areas of actual and potential slope instability, analyze their cause and develop preliminary recommendations for mitigating them.
- (vi) Review road safety implications for each design alternative and prepare preliminary designs for road safety features.
- (vii) Review environmental implications of construction, including those related to opening of borrow pits and disposal of spoil.
- (viii) Estimate the civil works costs for each design alternative, separately identifying taxes and duties to an accuracy of $\pm 15\%$.
- (ix) Prepare a preliminary engineering design report, consolidating all technical inputs from other specialists as appropriate.

7. **Structural Engineer (International):** The Structural Engineer (1.0 person months) will be responsible for the preliminary design and cost estimation of structures and bridges. The Structural Engineer shall have at least 10 years relevant experience and shall be a professionally qualified engineer. The Structural Engineer will undertake the following tasks:

- (i) Assess existing structures and bridges along the route and recommend retention or otherwise.
- (ii) Assess the need for new bridges and large drainage structures, where the existing structure is inadequate, or realignment requiring new structures is proposed and prepare preliminary designs and cost estimates,
- (iii) Study the existing hydrological regime based on an analysis of rainfall, flood records and local inquiry. Estimate the required hydraulic capacity of bridge structures, including an estimate of the incremental capacity needed to cater for climate change considerations. A period of 50 years will be considered for major drainage structures and bridges, and 20 years for minor drainage structures including side drains and culverts.
- (iv) Prepare a program of geotechnical investigation needed for the design of drainage structures and bridges. Estimate the cost of the proposed geotechnical investigations.

8. **Drainage Engineer (International):** The Structural and Drainage Engineer (1.0 person months) will be responsible for the preliminary design and cost estimation of drainage and drainage structures. The Drainage Engineer shall have at least 10 years

relevant experience and shall be a professionally qualified engineer. The Drainage Engineer will undertake the following tasks:

- (i) Assess existing drainage structures along the route and recommend retention or otherwise.
- (ii) Assess the need for new drainage structures, where the existing structure is inadequate, or realignment requiring new drainage structures is proposed and prepare preliminary designs and cost estimates,
- (iii) Study the existing hydrological regime based on an analysis of rainfall, flood records and local inquiry. Estimate the required hydraulic capacity of the main drainage structures, including an estimate of the incremental capacity needed to cater for climate change considerations. A period of 50 years will be considered for major drainage structures and bridges, and 20 years for minor drainage structures including side drains and culverts.
- (iv) Prepare a program of geotechnical investigation needed for the design of drainage structures. Estimate the cost of the proposed geotechnical investigations.

9. **Geotechnical Engineer (International):** The Geotechnical Engineer (2.0 person-months) will provide inputs relating to slope stability, availability of construction materials and design of pavement options. The Geotechnical Engineer will be professionally qualified with at least 12 years relevant experience, at least 5 of which shall have been gained working on projects with similar geotechnical conditions. The Geotechnical Engineer will perform the following tasks:

- (i) Identify potential geotechnical constraints on the proposed road upgrading, particularly identifying specific locations where mitigation measures will be required.
- (ii) Guide site specific surveys as required for preliminary assessment and design of mitigation measures for geotechnical instabilities. Prepare preliminary designs in sufficient detail for assessment of cost, and social and environmental impacts, particularly resettlement impacts.
- (iii) Assess bio-engineering as a means of mitigating slope instability and recommend incorporation of measures in the project design as appropriate.
- (iv) Assess potential sources of materials, particularly pavement materials required for the works, along with processing requirements and oversee preliminary laboratory testing.
- (v) Prepare a detailed program, implementation schedule and budget for geotechnical investigations necessary for the design of the works.

10. **Environmental Specialist (International):** The Environmental Specialist (1.0 person months) will undertake an environmental assessment of the project in accordance with the Environmental Assessment and Review Framework (EARF) established for this project. The Environmental Specialist shall have more than 10 years relevant experience (including work in developing countries) and shall be a graduate in environmental science or environmental engineering. The Environmental Specialist will perform the following tasks:

- (i) Ensure that the project is prepared in compliance with both the government's and ADB's environmental policies, environmental assessment guidelines and the EARF.
- (ii) Assess the potential environmental impacts of the project in accordance with the EARF and determine the environmental categorization in accordance with ADB's Safeguard Policy Statement (SPS). Prepare an initial environmental assessment (IEE) taking into consideration direct and indirect impacts during pre-construction, construction and operation, and identifying costs of mitigation measures and implementation of a monitoring plan.
- (iii) Identify potential impacts of the road on surrounding vulnerability.
- (iv) Synthesize the most recent and relevant assessments of future climate changes, within the scope of the project objectives, and provide recommendations to the project team of expected climate changes, including their probabilities of occurrence and certainty.
- (v) Prepare recommendations for integrating climate change considerations into the design of the project.

11. **Social Safeguards Specialist (International):** The Social Safeguards Specialist (2.5 person months) will undertake screening and scoping for social impacts. The Social Safeguards Specialist shall have at least 10 years relevant experience including experience and be a graduate in a relevant social science discipline. The Social Safeguards Specialist will perform the following tasks:

- (i) Undertake screening and scoping and prepare the resettlement and indigenous peoples screening forms and checklists for the project.
- (ii) Assess land acquisition and resettlement impacts in accordance with the project's resettlement framework (RF) and prepare a resettlement plan (RP).
- (iii) Submit the RP for clearance by Government and ADB.
- (iv) Assess the social impacts of the project and prepare analyses for inclusion in the feasibility study reports and in the IEE. Recommend mitigation measures where needed and estimate their cost.

12. **Survey Manager (International):** The Survey Manager (2.5 person-months) will be responsible for all topographic survey. The Survey Manager shall be a professionally registered surveyor with not less than 10 years experience in topographic surveys for civil works. The Survey Manager will:

- (i) Manage a team of technician surveyors, ensuring best practice and appropriate accuracy;
- (ii) Conduct control surveys and install permanent and stable recovery markers suitable for reference during detailed design work and construction;
- (iii) Conduct preliminary topographic surveys of the road corridor, sufficient for preliminary design work;

(iv) Ensure timely and accurate transfer of survey information to the design engineers.

13. Miscellaneous technical and supporting staff: The consulting firm shall provide all supporting staff (at least 10 person months of technically qualified national personnel) including but not limited to surveyors, chainmen, laboratory technicians, traffic counters, social survey assistants, office administrators and assistants as may be needed to satisfactorily undertake the feasibility study.

B. Detailed Engineering Design

3. Scope of Detailed Engineering Design

14. Detailed engineering design will be prepared for the whole length of the road from Manatuto to Natarbora, and for the feeder road to Laclubar. However, it is envisaged that in order to expedite the work, it will be packaged into two or more contracts for construction purposes.

15. Designs shall be based on national standards where these have been promulgated, or exist in draft form. Similarly, specifications shall be based on Mol's draft specifications for road and bridge works. These standards and specifications shall be reviewed by the design team and project specific amendments incorporated as required and agreed by Mol. Detailed design activities, shall to the extent possible be integrated with those associated with the feasibility studies.

16. Detailed design will include but is not necessarily limited to the following activities:

- (i) Topographic surveys. The consultant will undertake a control survey and establish stable permanent recovery markers (bench marks) at intervals of not more than 1 km. Where practical, the benchmarks shall be inter visible. Topographic survey with a survey width of not less than 25 metres either side of the existing road centre line, or centre of any realigned section, shall be undertaken, with a wider survey corridor where necessary for the design of earthworks, slope stabilization works, drainage works, road realignment and the like.
- (ii) Geotechnical survey. Undertake detailed geotechnical investigation of the subgrade. Undertake detailed investigation of existing and potential slope instability and design counter measures, including retaining structures, slope drainage, scour prevention, and bio-engineering. Undertake geotechnical investigations for the design of foundations of major structures including bridges.
- (iii) Traffic. Review traffic analyses prepared under the feasibility study and prepare pavement structure and surfacing design, taking into account traffic loading over a design life of 20 years, subgrade condition and variability, topographic and climatic conditions and the likely maintenance regime after construction.
- (iv) Drainage. Undertake detailed design of all drainage structures including side drains, culverts, associated inlet and outlet channels. Particular attention shall be paid to prevention of scour and siltation. Anticipated climate change impacts shall be catered for in the design and capacity of the drainage structures.

- (v) Determine the incremental cost of measures designed to accommodate forecast changes in climate characteristics.
- (vi) Bridge design. Undertake detailed hydraulic and engineering design of bridge structures.
- (vii) Prepare draft bidding documents for review by Mol and ADB and incorporate comments as required.

4. Composition and inputs of the Detailed Design Team

17. Feasibility study team members shall continue their inputs as Detailed Design Team members and to integrate the separate activities to contribute seamlessly to the design phase activities.

18. **Road Design Engineer (International):** The Road Design Engineer (5.5 person-months) will assume project team leadership after completion of the Transport Economist inputs. The Road Design Engineer will be responsible the detailed design of the road upgrading and for preparation of bid documents.

- (i) Lead all activities relating to detailed design and preparation of bidding documents ensuring quality and timely delivery;
- (ii) Develop design standards and specifications with for road construction in close consultation with Mol, and having due regard to underpinning and strengthening of national systems and resources;
- (iii) Prepare pavement designs on the basis of subgrade condition, projected traffic levels, axle load considerations, climatic considerations and expected future maintenance regime;
- (iv) Prepare detailed drawings and construction schedules;
- (v) Review the need for road safety measures and incorporate mitigation measures in the design as appropriate;
- (vi) Prepare bills of quantity, aligned with a standard method of measurement for the purposes of bidding and payment of the contractor during construction;
- (vii) Prepare detailed construction cost estimates, identifying component of cost for taxes and duties;
- (viii) Prepare construction schedules showing anticipated contract durations, and expenditure projections on a quarterly basis;
- (ix) Prepare draft bidding documents for review by Mol and ADB

19. **Structural Engineer (International):** The Structural Engineer (3.0 person months) will:

- (i) Establish parameters for bridge design, taking into account climate change forecasts over the design life of the road and component parts;

- (ii) Identify, design and quantify all necessary bridges and large drainage structure and ensure that these are incorporated in the overall design of the works;
- (iii) Design all erosion protection measures associated with the major structures;
- (iv) Prepare full designs for all bridge structures, large drainage structures (including insitu box culverts, aprons, wing walls etc;
- (v) Prepare specifications, bills of quantity and construction drawings

20. **Drainage Engineer (International):** The Drainage Engineer (2.0 person months) will:

- (i) Establish parameters for drainage design, taking into account climate change forecasts over the design life of the road and component parts;
- (ii) Identify, design and quantify all necessary drainage systems including bridges, pipes, box culverts side drains, off-take ditches and the like and ensure that these are incorporated in the overall design of the works;
- (iii) Design all erosion protection measures, including cascades, lined drains etc;
- (iv) Prepare full designs for all drainage structures (including insitu box culverts, pipes, aprons, wing walls, etc);
- (v) Prepare specifications, bills of quantity and construction drawings for drainage works.

21. **Geotechnical Engineer (International):** The Geotechnical Engineer (4.0 person-months) will:

- (i) Undertake a program of geotechnical investigations required for the detailed design of structural foundations, road pavement design, slope stability measures and the like;
- (ii) Interpret the results of geotechnical investigations and prepare appropriate designs, in conjunction with the Drainage and Structural Engineer.
- (iii) Design slope stabilization measures using bio-engineering methods and prepare drawings and specifications as appropriate

22. **Materials Engineer (International):** The Materials Engineer (3.0 person-months) will be responsible for the quality of materials and construction. The Materials Engineer will be a degree qualified engineer with not less than 10 years relevant experience. The Materials Engineer will:

- (i) Prepare a detailed list of laboratory equipment and associated specifications (to be incorporated in the bidding documents and procured under the first civil works contract), necessary for quality control by the supervising engineer during construction;
- (ii) In conjunction with the Geotechnical Engineer, undertake detailed investigations of material sources (including road cuts) for construction of embankments and pavement layers;

- (iii) In conjunction with the Geotechnical and Roads Engineers, conduct an assessment of the pavement sub grade for the whole length of the road;
 - (iv) Prepare a factual report (without interpretation of the results) on the results of all materials testing carried out for the purpose of designing the works and incorporate in a compilation of information for bidders.
23. **Environmental Specialist (International):** The Environmental Specialist will:
- (i) Update the IEE and associated EMP in accordance with the EARF;
 - (ii) Ensure that the updated EMP is included in the draft bidding documents;
 - (iii) Assist the PMU in obtaining all necessary environmental permits and licenses for construction of the works (but excluding those for borrow pits, gravel pits and quarries, work areas, storage areas etc which will be the responsibility of the contractor unless nominated for compulsory use in the bidding documents);
24. **Social Specialist (International):** The Social Specialist (1.0 person-month) will:
- (i) Update the resettlement plan in accordance with the resettlement framework, and in accordance with the resettlement requirements identified by the detailed surveys and design of the works.
25. **Survey Manager (International):** During the detailed design phase, the Survey Manager (4 person months) will:
- (i) Manage a team of technician surveyors ensuring accuracy and timeliness for survey outputs;
 - (ii) Conduct detailed topographic surveys of the road corridor, creating a terrain model extending at least 25m either side of the existing road or proposed realignment, and any area outside of this corridor that may be required for slope stabilization works, erosion protection, stream flow calculations etc;
 - (iii) Capture all significant topographical and physical features within the surveyed areas, including dwellings, animal sheds, fences and trees of more than 300mm diameter in the survey;
 - (iv) Coordinate timely and accurate transfer of survey information to the design engineers.
26. **Miscellaneous technical and supporting staff:** The consulting firm shall provide appropriately experienced and qualified supporting staff, both in Timor Leste and the home office (at least 10 person-months national staff) including but not limited to surveyors, draftspersons, chainmen, laboratory technicians, field local liaison personnel, office administrators and assistants as may be needed to satisfactorily undertake the detailed design work.

C. Timing of Feasibility and Design Activities

27. It is expected that the services will commence during April 2012. Feasibility studies shall be completed within 4 months of commencement. Detailed engineering design and

draft bidding documents for a first contract package (tentatively assumed to be for upgrading of the road from Manatuto to Laclubar) will be prepared within 6 months of commencement, with detailed design and bidding documents for the balance of the road within 8 months of commencement.

D. Counterpart Facilities – Feasibility and Design Activities

28. The Consultant shall make its own arrangements for office accommodation, facilities and equipment in the country. However, the Consultant is expected to establish an office in Dili, which can also support parallel construction supervision services that are described hereunder. Similarly, the Consultant shall make its own arrangements for international and local transportation.

29. The Mol will make available, basic materials testing laboratory facilities equipped to carry out sieve analyses, Atterberg limit tests and California Bearing Ratio testing. The Consultant shall provide its own materials testing technicians and labor and shall be entirely responsible for the conduct of the testing and interpretation of the results.

30. The Mol may attach personnel to the Consultant's team from time to time for training and experience purposes. The Consultant shall use its best endeavors in ensuring that appropriate exposure to all aspects of the assignment is provided.

III. CONSTRUCTION SUPERVISION

A. Construction Supervision

31. Contract management and construction supervision services shall be provided for (i) upgrading of the road from Dili to Liquica (DL- 29kms) and (ii) upgrading of the road from Tibar to Ermera (TE-45kms). It is expected that these contracts will be awarded in the second quarter of 2012.

32. Services to be provided during the construction phase include but are not necessarily limited to the following:

- (i) Liaising between the Mol and contractor and preparing and submitting monthly progress reports for submission to Mol and ADB. The format and content of these reports shall be agreed on with Mol and ADB;
- (ii) Supervising the works, approving materials, equipment and workmanship to ensure that the contract is executed in accordance with the requirements of the contract;
- (iii) Monitoring and checking the day-to-day quality control and quantity measurements of the works carried out under the contract;
- (iv) Checking all quantity measurements and calculations required for payment purposes and ensure that all measurements and calculations are carried out in a manner and at the frequencies as required by the contract;
- (v) Checking and countersigning the monthly payment certificates after having established that the quality of the works is satisfactory and the quantities are correct;
- (vi) Inspecting all works to ensure conformity of the implemented works to the approved design requirements and solutions and compliance with the drawings and other documents comprising the contract and identifying any deviations from the original design;

- (vii) Updating the original designs or proposing new solutions as necessary to reflect changed conditions on the field;
- (viii) Interpreting and applying the requirements of the contract and advising the Mol on all matters relating to claims from the contractors, in particular with respect to claims for time extensions or extra payments and making recommendations thereon, including the possible recourses;
- (ix) Preparing detailed recommendations for contract variations for the review and approval by the Mol;
- (x) Maintaining a day by day contract diary which shall record all events (including environmental and social) pertaining to the administration of the contract, requests forms and orders given to the Contractors, and any other information which may at a later date be of assistance in resolving queries which may arise concerning execution of the works;
- (xi) Supervising the Contractor in all matters concerning safety and care of the works and workers (including the erection of temporary signs at road works) and, if required, to instruct the Contractor to provide any necessary lights, guards, fencing, and watchmen in accordance with the requirements of the Contracts;
- (xii) Reviewing, approving and monitoring the contractor's work program and the sources of materials;
- (xiii) Monitoring and reporting upon training and equipment provided by the contractor to the micro-enterprise maintenance groups;
- (xiv) Reviewing, approving and monitoring implementation of the contractors' environmental management plan, including ensuring the contractor complies with its reporting requirements and incorporating such reports in the consultants quarterly progress reports to the Mol and ADB;
- (xv) Explaining and/or making recommendations to the Mol to resolve (adjust) ambiguities, discrepancies or disputes arising from the contracts;
- (xvi) Inspecting and testing materials and works done by the contractor to ensure compliance with the contract specifications, and/or instructing the contractor to remove and substitute the improper materials and/or work as required to meet contract specifications;
- (xvii) Keeping a log book throughout the construction period where daily records over work quantities, tests and other activities to serve as a basis for monthly reporting and necessarily contain, as a minimum, information concerning:

- Work day start and end;
- Contractor's capability to execute works (availability of required equipment and labor force, technical condition, safety provision for works execution);
- Materials and structures brought to the construction site during the day (name, quantity, quality certificate or laboratory testing results)
- Works accomplished by the contractor during the day, i.e. name, place, volume, etc (appropriate documents to be attached)
- deviations from the design documents, appropriate measures undertaken
- emergencies, accidents, not planned suspension of works (indicating the reasons);
- Compiling monthly reports on the Contracts supervision and checking monthly billings;
- Controlling and appraising the progress of the works and recommending the Mol to order suspension of works and to authorize extensions of the period for completion of the works;
- Inspecting for approval all working drawings and as-built drawings prepared by the contractor;

- assisting the Mol with taking over from the contractor of the Contract, in particular by preparing lists of deficiencies which need to be corrected;
- Measuring International Roughness Index (IRI) after the completion of each construction contract (equipment and technical staff to be provided by PMU).
- Monitoring temporary employment generation through civil works;
- Monitoring travel time improvement to drive the length of the rehabilitated road sections in comparison with baseline conditions;
- Assisting the Mol and PMU to carry out any other duties and responsibilities specified in the contracts.

5. Composition and Inputs of the Construction Supervision Team

33. The Supervision Team shall comprise as a minimum, a Supervision Team Leader to act as the "Engineer" (as per the definition of "Engineer" of the in the civil works contracts), a Senior Quality Assurance Engineer, Supervisors and other specialists and administrative staff needed to meet the requirements of these TOR:

34. **Supervision Team Leader/Engineer (International):** (6.0 person-months intermittent). The Supervision Team Leader should be a graduate senior highway/road engineer with at least 15 years international and relevant professional experience with a proven record of at least 10 years of managerial experience in projects of a similar nature and magnitude (preferably with financing by international financing institutions). The Supervision Team Leader/Engineer will:

- (i) Establish systems within the site supervision team for supervising the work, contract management, quality control, data collection, certification of contractors' accounts etc
- (ii) Assume the role of Engineer as defined in the construction contract, ensuring that all procedures for the administration of the contract are followed;
- (iii) Ensure that the Environmental Management Plan and Resettlement Plans are effectively implemented;
- (iv) Ensure that all reporting, including for environmental monitoring and other safeguards is fully and punctually provided to the Mol;

35. **2 No. Resident Engineer (International):** (21 and 27 person-months for DL and TE respectively).The Resident Engineer shall be a highway engineer with at least 10 years professional experience including at least 5 years of relevant experience including contract management. The Resident Engineer, under authorities delegated to him by the Engineer, will:

- (i) supervise construction of the work and test or order to test and examine any materials to be used or workmanship employed in connection with the works.
- (ii) lead the supervision team on a day to day basis;
- (iii) train Mol engineers in contract administration, assigning roles and responsibilities to such engineers as are attached to the team from time to time;
- (iv) Ensure that the team accomplishes all tasks and duties listed in para 29 above.

36. **Senior Quality Assurance Engineer:** (28 person-months) Senior Quality Assurance Engineer should be a graduate senior road engineer with at least 10 years international

professional experience including at least 5 years of relevant experience. He/she should have experience with the construction and testing of flexible pavements including asphaltic and bituminous surface dressings and their constituent materials in tropical countries. The Senior Quality Assurance Engineer will:

- (i) Establish a basic laboratory in premises to be provided under the civil works contracts, ensuring that equipment provided is sufficient for routine construction quality control;
- (ii) Train Mol technicians assigned to the laboratory in the required standard testing procedures;
- (iii) Undertake routine and random quality assurance testing of materials and construction quality;
- (iv) Maintain systematic records of all testing performed.

37. **2 No. Senior Works Inspector (International):** (18 and 27 person-months for DL and TE respectively). The Senior Works Inspector shall have at least 10 years international experience supervising civil works construction with at least five years experience supervising the construction of road pavements and associated drainage. The Senior Works Inspector will:

- (i) Inspect all operations on the site, ensuring safe practices and good workmanship;
- (ii) Maintain a detailed record of daily activities on the site including equipment working or broken down, weather conditions, labor, work stoppages and the reasons therefore etc.
- (iii) Assist in the training of contractors' personnel for community based road maintenance groups, ensuring transfer of knowledge in basic road maintenance techniques and operation of basic equipment.

38. **2 No. Deputy Resident Engineer (National):** (21 and 27 person-months for DL and TE respectively). The Deputy Resident Engineers will be graduate civil engineers with not less than five years post-graduate experience in construction. The Deputy Resident Engineers will:

- (i) Support the Resident Engineers in day to day management of the civil works contract;
- (ii) Liaise with the Materials Engineer and Senior Works Inspectors to ensure works are constructed in accordance with the designs and stipulated quality;

39. **Miscellaneous technical and supporting staff:** The consulting firm shall provide appropriately experienced and qualified national supporting staff (including but not limited to surveyors (51 person-months), laboratory technicians (51 person-months), office administrator (30 person-months) and miscellaneous assistants and labor as may be needed to satisfactorily undertake the supervision of the works.

B. Services during the Defects Notification Period and Final Statement

40. The Defects Notification Period will be 2 years. The Engineer or his delegate will conduct an inspection of the works after a year and on the expiry of the Defects Notification Period. The Engineer will provide a report outlining any actions to be taken pursuant to the construction contract and issue such notices as may be necessary. The consultant should

allow for two site visits of one week and two weeks for these activities respectively and for each civil works contract.

41. During the second such visit, the Engineer or his delegate will gather such data as may be needed to agree the contractors final statement and to process the final payment certificate. The consultant shall allow one week in the home office for processing the final payment certificate.

C. Counterpart facilities

42. **Counterpart personnel:** The Mol will provide three laboratory assistants (labor), and two survey assistants (chainmen) for the duration of the construction of the works. These personnel will be provided by the civil works contractor through the construction contract. The Mol will also support the supervision team on an intermittent basis with a Social Specialist and an Environmental Specialist.

43. **Office accommodation and logistics:** Basically furnished and equipped office accommodation and a materials testing laboratory will be provided by the Mol in or near to Tibar. A list of all equipment (office, laboratory and survey equipment) will be provided with the request for a proposal. Five double cab utility vehicles will be provided through each construction contract for use by the supervision team.

IV. REPORTING

A. Reports

44. The consultant shall provide the following reports and documentation to the PMU:
- (i) within one month of commencing the services, five copies of an inception report confirming implementation plans for the feasibility and design studies,
 - (ii) within three months of commencement, five copies of an initial environmental examination,
 - (iii) within three months of commencement, five copies of a preliminary resettlement plan,
 - (iv) within 6 months of commencement, draft bidding documents, along with a detailed design report setting out all data and considerations upon which the design was based for the Manatuto to Laclubar contract package;
 - (v) within 8 months of commencement, draft bidding documents, along with a detailed design report setting out all data and considerations upon which the design was based for the Laclubar Turnoff to Natarbora contract package;
 - (vi) within 7 days of receipt of approval from ADB, final bidding documents, 3 copies each for ADB and PMU, and 10 copies for issuance to bidders
 - (vii) during the construction phase, a monthly report in five copies outlining progress and issues arising
 - (viii) within 30 days of practical completion of the works, a completion report summarizing the progress, issues, costs, payments etc

Expression of Interest Consulting Firms¹

1. Project Data

Project Number: 45094	
Project Name: Road Network Upgrading (Sector) Project	
Project Country: Timor Leste	

2. Eligibility

Declaration

We² hereby declare that:

- (i) we have read the advertisement, including the terms of reference (TOR), for this assignment;
- (ii) we have not been engaged to prepare such TOR as a firm, subconsultancy, or joint venture; and
- (iii) no full-time or part-time or contracted expert employed by our firm, subconsultancy, or joint venture has been engaged to prepare such TOR.

We further confirm that, if any of one or more of our experts is engaged to prepare TOR for any ensuing assignment as part of our work product under the assignment to which this advertisement relates, our firm and any such expert(s) will be disqualified from short-listing and/or participation in such follow-on assignment.

Lead Firm		CMS Registration Number: ³
Signed by: Position :		
Associate/Partner 1		CMS Registration Number: ³
Signed by: Position :		
Associate/Partner 2		CMS Registration Number: ³
Signed by: Position :		
Associate/Partner 3		CMS Registration Number: ³
Signed by: Position :		

¹ This EOI template is applicable for TA and maybe adapted for loan projects to accommodate an executing agency's specific requirements.

² EOIs may be submitted by a firm, subconsultancy, or a joint venture. For short-listing purposes, the combined experience of a subconsultancy or a joint venture will be evaluated although the qualifications of the lead firm will be given a greater weight. Whereas the firm, subconsultancy, or joint venture is free to submit additional information, short-listing will be based primarily on information included in this EOI template.

³ CMS registration is not mandatory for the associated firms

3. Management Competence (Please answer each question in one paragraph of 3-5 sentences)

a. If you are proposing a subconsultancy or a joint venture, outline the rationale for and benefits of the "association." Outline proposed management coordination of the "association," including the role of each firm.

b. Does your firm/subconsultancy/joint venture have standard policies, procedures or practices in place that promote quality in: the workplace, your interaction with clients, and the outputs you produce? If yes, describe briefly.

c. Does your firm/subconsultancy/joint venture have a dedicated unit or staff solely responsible for quality assurance? If yes, describe briefly.

d. How will you ensure the quality of your firm's/subconsultancy's/joint venture's performance over the life of this assignment?

e. How will your firm/subconsultancy/joint venture deal with any complaints concerning the performance of the staff or the quality of the reports submitted for this consulting assignment? What internal controls are in place to address and resolve complaints?

4. Technical Qualifications

Narrative Descriptions

Based on the attached reference project sheets, highlight the technical qualifications of your firm/subconsultancy/joint venture (maximum of 2 pages).

Project Sheets

Indicate up to 6 reference projects that the firm/subconsultancy/joint venture feels are relevant. You may refer to your CMS projects sheets for more detailed information.⁴

Project 1 of ___

• Project Name			
• Name of Client			
• Country		Project location within Country	
• Participation		<input type="checkbox"/>	As lead firm
		<input type="checkbox"/>	As associate firm
• Value of Services		(US\$)	
• Source of Financing			
• Consultancy Services			
(i) No. of staff			
(ii) No. of person months			
• Length of Consultancy Assignment			
• Start Date		(dd/mm/yyyy)	
• Completion Date		(dd/mm/yyyy)	
• Name of Associate Firms (if any)			
• No. of Person-Months of Professional Staff Provided by Associated Firm(s)			
• Name of Senior Staff (Project Director/Coordinator, Team Leader) Involved and Functions Performed			
• Detailed Narrative Description of the Project			
• Detailed Description of the Actual Services Provided by your Firm			

⁴ Applicable to TA only.