TERMS OF REFERENCE

PNG: Review of the Feasibility Studies, Detailed Engineering Designs, and Preparation of Due Diligence Reports for Proposed Transport Projects

A. Introduction

1. The government of Papua New Guinea (GoPNG) has requested Asian Development Bank’s (ADB) support to (i) improve the northern region transport corridor, including ports of Vanimo and Wewak, and (iii) continue improvement of the core road network of the Highlands region. To ensure the readiness of the projects to be approved, it has been agreed that the project readiness financing (PRF), which is a stand-alone loan, will be used to finance the feasibility studies, detailed designs and procurement support to ensure the high project readiness upon approval of the ensuing programs/projects. The consulting firms (PRF consultants) to prepare such feasibility studies and detailed engineering designs for ensuing programs/projects is being recruited.

2. The Development Strategic Plan (DSP) 2010-2030 of the Government of Papua New Guinea (GoPNG) recognizes the northern region corridor as one of the most critical economic corridors in Papua New Guinea (PNG). The northern region corridor program has been identified as a priority investment in both the Medium-Term Development Plan III (MTDP III, 2018-2022) and the PNG National Road Network Strategy (2018-2037). The northern road corridor starts at the Indonesian-PNG border at Wutung near Vanimo (capital of West Sepik Province) and extends southeast along the northern coast to Wewak (capital of East Sepik Province), Angoram and Madang (capital of Madang Province), then farther south via Lae (capital of Morobe Province) and finally to Kerema (capital of Gulf Province) on the south coast of New Guinea island. The total length of the northern region corridor is 1,457 km. It connects the ports of Vanimo, Wewak, Madang, and Lae to the Highlands highway and southern region corridor. The existing northern region road is largely in very poor condition. Significant parts are unpaved earth roads and many of them are single lanes that need to be widened to two lanes. The route includes three missing links: (i) Vanimo-Aitape (106 km), (ii) Bogia-Angoram (101 km), and (iii) Wau-Malalaua (133 km). Vanimo and Wewak ports are potential hubs for palm oil exports and are in poor condition and require upgrading in terms of channel dredging, wharf extension and general infrastructure updates. Vanimo and Wewak have no customs facilities.

B. Objectives of the Assignment

3. The main objectives of the assignment are (i) to review the feasibility studies and detailed designs for three ensuing programs/projects, to be prepared by PRF consultants, (ii) to undertake other due diligence required to prepare project ready for ADB financing, and (iii) to provide support and inputs to ADB during processing of the ensuing programs and projects for their approval by the ADB Board.

4. Services of this assignment will be financed through ADB’s transaction technical assistance (TA) facility. A consulting firm (the Consultant) will be recruited to provide such services as described in these TOR. The ensuing projects are:
(i) Northern region road corridor from Wutung to Angoram (Momase international highway).¹
(ii) Northern region road corridor from Lae to Malalaua via the Wau-Bulolo highway (Trans-Island highway).²
(iii) Highlands Region Road Improvement Investment Program, Phase 2.³

C. Implementation Arrangements

5. The Consultant’s contract will be administered by the ADB who will closely coordinate with the respective government agencies in relation to the approval of deliverables. The Executing Agency (EA) for the road component is Department of Works and Implementation (DOWI) and EA for the port component is the Department of Transport (DOT) of the GoPNG. The Project Implementation Unit (PIU) to be established under the DOWI will be the implementing unit of the project. The Consultant will mobilize promptly after signing the contract agreement, and will compile, prepare and submit all required reports within the timelines mentioned in these TOR. The Consultant will respond promptly to all queries raised by ADB.

6. In parallel with this assignment a separate PRF loan is being processed. Activities under the PRF are not subject to these TOR. The following table summarizes the preparation activities which will be carried out through the PRF and TA facility.

Table 1. Preparation activities of the ensuing projects

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<thead>
<tr>
<th>Preparation activity</th>
<th>Responsibility</th>
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<tr>
<td></td>
<td>PRF (to be implemented separately)</td>
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<tr>
<td>Preliminary design</td>
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<td>Environmental safeguards due diligence</td>
<td>✔</td>
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<tr>
<td>Social safeguards due diligence</td>
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<tr>
<td>Economic analysis</td>
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<tr>
<td>Detailed engineering design</td>
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<td>Bidding documents</td>
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<tr>
<td>Risk assessment</td>
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<tr>
<td>Road Safety Audit</td>
<td>Internal</td>
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<td>Procurement assessment</td>
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<tr>
<td>Financial analysis</td>
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<tr>
<td>Financial management assessment</td>
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<tr>
<td>Sector assessment</td>
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<tr>
<td>Climate risk vulnerability assessment</td>
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<td>Gender assessment and gender action plan a</td>
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<td>Poverty and social assessment a</td>
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a Gender assessment and gender action plan, and poverty and social assessment will be conducted through a separate consultancy.

PRF = project readiness financing, TA = technical assistance, TOR = Terms of Reference

¹ The PRF consultant to prepare the feasibility study and the detailed engineering designs for this road is expected to be mobilized in Q1/2020 with an estimated assignment period of 24 months.
² The PRF consultant to prepare the feasibility study and the detailed engineering designs for this road is expected to be mobilized in Q2/2020 with an estimated assignment period of 24 months.
³ Preparation of the designs will be conducted through the existing program and through the PRF, tentatively such activities will commence in Q1/2020 and they are estimated to be completed 21 months after commencement.
D. Scope of Consulting Services

1. General

7. The focus of all activities described below will include three ensuing programs/projects as provided in the Section B of these TOR. The Consultant will (i) review the PRF consultants’ work, (ii) undertake due diligence required, including procurement assessment; risk assessment, including integrity risk assessment, financial analysis and financial management assessment; sector assessment; and climate risk vulnerability assessment (CRVA) (see Table 1), and (iii) provide necessary support to ADB during processing the ensuing programs/projects for ADB’s Board approval. The Consultant is expected to work closely with PRF consultants with the objective to find the most feasible solution as to be agreed with the government agencies and ADB.

8. The widening/improving of the existing roads should be within the existing alignment/right of way avoiding land acquisition as much as possible. However, bypass proposals should also be considered, where in town areas improvement of the road following the existing alignment is not possible. The viability of the projects will be established taking into account the requirements with regard to rehabilitation, upgrading and improvement based on highway design, pavement design, provision of service roads wherever necessary, type of intersections, rehabilitation and widening of existing and/or construction of new roads, bridges and structures, road safety features, port design, environmental and social considerations, quantities of various items of works and cost estimates and economic analysis.

9. The Consultant should ensure that detailed project preparation incorporates aspects of value engineering, quality audit and safety audit requirement in design and implementation.

10. Wherever required, the Consultant will liaise with the PRF consultants and concerned authorities and arrange all clarifications. Approval of all drawings to be reviewed by the Consultant will be done by the executing agencies (EAs). The Consultant should look at best international practices and recommend them for the PRF consultants, EAs and ADB, wherever there is scope for value addition.

11. The Consultant should also review all relevant strategies, master plans, and reports from previous studies, as well as ongoing/planned works on the project areas to understand the overall country and sector context. The Consultant will conduct site visits, as necessary.

12. The Consultant will review all reports and deliverables prepared by the PRF consultants, including: inception report, progress reports, final report, survey reports, design drawings, safeguards studies, etc. The PRF consultant will submit its outputs and deliverables to the EAs and ADB and EAs will provide these to the Consultant’s team leader for distribution to the relevant specialist for review and suggestions for changes or improvements, if necessary. The Consultant should use multi-disciplinary approach in order to assess all aspects (technical, economic, financial, environmental, social, gender, climate change, safety, etc.) of the outputs reviewed. The Consultant will pay special attention to consider alternative engineering and nature-based/environmental solutions in order to determine cost effective and safe solutions for the project road. Future maintenance requirements will be considered when comparing alternatives.

13. The Consultant needs also to review and ensure that designs to be prepared will integrate any measures needed to (i) promote resilience to climate change and disasters triggered by
natural hazards, (ii) incorporate elderly, women, children and disabled (EWCD)-friendly features, and (iii) contribute to gender equality and encourage benefits for women.

2. **Activity 1. Review of the feasibility studies and preliminary designs for ensuing projects (road component)**

a. **Review of Technical and Economic Data and Documents**

14. The Consultant will review all data, outputs, and deliverables collected and prepared by the PRF consultants, including but not limited to:

(i) Quality Assurance Plans;
(ii) Work programs for the PRF consultancies;
(iii) Topographic surveys methodology and data;
(iv) Geotechnical and material investigations methodology and data;
(v) Road inventory and road condition data, including pavement surveys methodology and data, laboratory tests methodology and data and drainage structures data;
(vi) Bridge inventory and bridge condition data, sub-surface, geotechnical data, hydraulic data, drawings and details of existing bridges;
(vii) Option analysis considering all aspects and the overall target that the final design should follow the existing alignment as much as possible to minimize the land acquisition;
(viii) Design standards and proposed preliminary design options for cross-section, pavement structure, road alignment, and other main design features;
(ix) Traffic surveys, including traffic counts, origin-destination surveys and cargo movement characteristics, axle loading characteristics and intersection volume counts;
(x) Traffic demand estimates, including growth factors, forecasting methodology, assumptions and seasonal factors used, etc.;
(xi) Economic analysis following ADB Guidelines for the Economic Analysis of Projects. The Consultant will also draft the 5-page summaries for each project for ADB’s processing purposes based on the full economic analysis prepared by the PRF consultants; and
(xii) Climate data and existing climate change projections.

b. **Review of the Environmental Safeguards Due Diligence**

15. **Note:** This task applies to Activity 1 and 3 i.e. for road and ports. Due diligence of environmental safeguards will be carried out in accordance with ADB’s Safeguard Policy Statement 2009 (SPS) and the country’s laws and regulations. This includes, screening, scoping, assessment and mitigation planning. The tasks include but are not limited to the following:

(i) Review the environmental safeguards documents to be produced by the PRF consultants and ensure their compliance with ADB safeguards policies and pertinent government laws and other co-financiers if applicable;
(ii) Validate information and provide necessary inputs as required to meet the information gaps in the safeguard documents prepared by the PRF consultants; and
(iii) Carry out environmental safeguards trainings and capacity building activities for the government and relevant stakeholders to ensure smooth safeguards implementation.

c. **Review of the Social Safeguards Due Diligence**

16. **Note:** This task applies to Activity 1 and 3 i.e. for road and ports. Due diligence of social safeguards will be carried out in accordance with ADB’s Safeguard Policy Statement 2009 (SPS)
and the country’s laws and regulations. This includes, screening, scoping, assessment and mitigation planning. The tasks include but are not limited to the following:

(i) Review the social safeguards documents to be produced by the PRF consultants and ensure their compliance with ADB safeguards policies and pertinent government laws and other co-financiers if applicable;
(ii) Validate information and provide necessary inputs as required to meet the information gaps in the safeguard documents prepared by the PRF consultants;
(iii) Provide additional support to the government, if required, in sorting out outstanding land issues to avoid project delays, provide compensation and putting in place livelihood restoration program and grievance redress mechanism to facilitate civil works;
(iv) Carry out safeguards trainings and capacity building activities for the government and relevant stakeholders to ensure smooth safeguards implementation; and
(v) Review the stakeholder engagement and communication plan prepared by the PRF and ensure the involvement of all the key stakeholders including women and vulnerable groups.

3. Activity 2. Review of the Detailed Engineering Designs for ensuing projects (road component)

a. Review of the technical design

17. The Consultant will review all data, outputs, and deliverables collected and prepared by the PRF consultants, including but not limited to:

(i) Final design standards adopted;
(ii) Geometric designs, especially horizontal alignment, longitudinal profile, junctions, roadside facilities, and bypasses, if any;
(iii) Pavement designs, especially the rehabilitation and widening methods proposed, design methodology, and maintainability and life cycle costs of the pavement.
(iv) Design of embankments;
(v) Design of bridges and structures, including designs to reconstruct the existing bridges and building new ones;
(vi) Design of drainage systems;
(vii) Traffic safety designs, road furniture and road markings;
(viii) Weighing stations and service areas, including weighing methodology proposed;
(ix) Designs to relocate utilities;
(x) Preliminary traffic management plans for the construction; and
(xi) Road maintenance plans, especially to ensure that the plan is a gender-inclusive and approaches suitable for mainstreaming local labor-based appropriate technologies to enhance employment benefits (with particular focus on women) have been identified; and
(xii) Design of the potential facilities under the poverty and social development component.

b. Review of the environmental aspects

18. The Consultant will review the detailed designs to ensure that all mitigation recommendations, as agreed with the EAs and ADB during the feasibility study stage, has been integrated into the design and bidding documents.

c. Road Safety Audits
19. The Consultant will undertake the Road Safety Audit (RSA) of the draft designs in compliance with the recommendations of Road Safety Audits for Road Projects – Operational Tool Kit (ADB, 2003). The RSA will verify that all relevant safety measures will be integrated into the final design or provide explanation for non-compliance. Any further road safety risks should be highlighted for mitigation before issuance and acceptance of the final detailed design.

d. Review of cost estimates

20. The Consultant will review and assess the full detailed design documentation to:

(i) identify the main work items and undertake own calculations of quantities;
(ii) check quantities as per own calculations against quantities in the Bill of Quantities (BoQ) and determine deviations, if any;
(iii) assess the impacts of such discrepancies and the risk for a cost overrun; and
(iv) identify mitigating measures to avoid a cost overrun.

21. The Consultant will review the proposed contract packages to ensure the efficient and economic packaging of the works, including an option to include port components into bid documents. The government wishes to (i) generate competition and (ii) develop the private sector in Papua New Guinea.

22. The Consultant will review the bidding documents for construction works in accordance with ADB Procurement Guidelines, and with ADB’s standard bidding document for works. Technical specifications, detailed BoQ, cost estimation, Method of Measurement and other relevant documents needed for international bidding procedure will be reviewed.

4. Activity 3. Review the feasibility studies and detailed design to improve Vanimo and Wewak ports

a. General

23. Vanimo Port has been built in 1969 and the expansion work has been carried out in 1995. Wewak Port has been built in 1968. The infrastructure of both ports is aging and ports are lacking capacity to deal with large freight volumes with inability to dock large ships. The GoPNG has conducted the Feasibility Study for both ports in 2019. The GoPNG is now targeting to proceed to detailed design and implementing the project through ADB financing. Department of Transport is EA for the port component. PNG Port Authority is the operator of ports.

b. Review of the feasibility studies

24. Separate feasibility studies will be prepared for Vanimo and Wewak ports by the PRF consultants. The Consultant will review such studies, including but not limited to:

(i) passenger and cargo traffic analysis and forecasts;
(ii) economic analysis;
(iii) survey reports;
(iv) traffic analysis and forecasts;
(v) layout plan, indicating the major structures and facilities and their locations;
(vi) basic design, including design criteria, basic specifications, structural types of berthing and breakwater facilities
(vii) preliminary design of other facilities, including customs facilities;
(viii) construction cost estimate;
(ix) port operation plan;
(x) financial analysis;
(xi) environmental safeguards due diligence (refer to Activity 1 b); and
(xii) social safeguards due diligence (refer to Activity 1, c).

c. Review of surveys and investigations

25. Depending on the outcomes of the feasibility studies, surveys and investigations in both port areas will be carried out by the PRF consultants. The Consultant will review the proposed methodology and results of such surveys. These may include, but not limited to:

(i) geotechnical investigation, which will include the off-shore area comprising the existing and proposed breakwater(s) and wharf extension(s);
(ii) topographic survey of the entire area of both ports;
(iii) hydrographic surveys on existing channels and turning basis to confirm the hydrographic data is adequate for detailed design purposes;
(iv) meteorological and oceanographic data analysis;
(v) cadastral survey to accurately define the land ownership parcels within the ports’ limits and its peripheral properties.

d. Review of the detailed designs

26. The detailed design will include the designs for the customs facilities to be located within the port area. In addition to the port infrastructure design, the Consultant will review the designs of customs facilities as well. The Consultant will especially assess whether the designs include necessary measures considering cyclonic storm and other potentially naturally occurring conditions. The Consultant will also ensure that the proposed designs pay due regard to cost-effective construction and safe and efficient implementation of works. The review of the detailed design will include but not limited to:

(i) simulation model which will be prepared to confirm wave conditions in the approach channel, turning basin and berthing basin;
(ii) assessment of dredging needs and in case dredging is needed, review of the dredging plan, including environmental impacts;
(iii) ensure that the design takes into consideration the seismic risks and outcomes of the Climate Risk Vulnerability Assessment (CRVA), which will be prepared through this consultancy;
(iv) proposed sources of construction materials and their supply methods;
(v) the works program;
(vi) breakwater design, especially considering the cyclonic storm conditions and potential for liquefaction in the founding layers;
(vii) port infrastructure design, including:
   a. extension of existing wharfs;
   b. piers;
   c. office buildings;
   d. passenger/oil/gas terminals;
   e. roads;
f. palm oil tanks;
g. warehouses / bulk cargo handling facilities;
h. yards, especially assessing the pavement design of the yards;
i. proposed facilities under the poverty and social development component.

(viii) navigation aids and mooring buoys, in case navigation channels will be realigned, taking into account safe navigation of vessels passing in and out of the ports;
(ix) interim vessel operation plans (during construction) and vessel operation plans (after construction);
(x) specifications for the required navigation aid system;
(xi) designs for upgrading and/or providing utility services, including power, water, fire mains and hydrants, and lighting, etc. within the area of the ports;
(xii) customs service facilities, including overall layout, physical progress flow diagram of goods, customs building(s), needs analysis and specifications of the X-ray machine and associated unpacking/packing activities.
(xiii) other miscellaneous repairs, hazardous goods storage, storm drainage and minor works

e. Review of the cost estimates

27. The Consultant will review and assess the full detailed design documentation of both ports to:

(i) identify the main work items and undertake own calculations of quantities;
(ii) check the whole-life cost estimates covering maintenance and operation costs of the ports over the design life;
(iii) check quantities as per own calculations against quantities in the Bill of Quantities (BoQ) and determine deviations, if any;
(iv) assess the impacts of such discrepancies and the risk for a cost overrun; and
(v) identify mitigating measures to avoid a cost overrun.

f. Review of the contract packaging and bidding documents

28. The Consultant will review the proposed contract packages to ensure the efficient and economic packaging of the works, including an option to combine road and port components into one set of bid documents. The government wishes to (i) generate competition and (ii) develop the private sector in Papua New Guinea.

29. The Consultant will review the bidding documents for construction works in accordance with ADB Procurement Guidelines, and with ADB’s standard bidding document for works. Technical specifications, detailed BoQ, cost estimation, Method of Measurement and other relevant documents needed for international bidding procedure will be reviewed.

5. Activity 4. Due diligence for the ensuing projects

30. The Consultant will (i) support the assessment of the existing transport sector strategy, road map, policy framework, and medium to long-term investment plan to ensure reliable, inclusive, and sustainable operation of the program; (ii) support ADB to prepare loan processing documents as shown in Table 1; (iii) support the EAs and ADB to ensure the integration of the poverty and social development component to be prepared by a separate team of consultants; and (iii) provide necessary support and inputs (where necessary) to ADB during processing of ensuing projects for their approval by the ADB Board.
31. The Consultant will undertake the following:

a. **Sector assessment**

   (i) Review preconditions for the use of the Multitranche Financing Facility (MFF) by preparing road map, policy framework, and strategic context to ensure reliable, inclusive, and sustainable operation of programs;  

   (ii) Support to prepare all preconditions for MFFs in case there are any gaps or updates needed;  

   (iii) Considering the lessons learnt from the previous MFFs, analyze the proposed projects' outcomes, achievements, delivery activities, procurement, safeguards, and capacity of the government authorities including the executing agencies and implementing unit;  

   (iv) Conduct a transport (including land and maritime subsectors) sector assessment as per ADB format to identify strategic context, policy framework, sector roadmap, core sector problems, issues and opportunities, government sector strategy and challenges and ADB sector experience and assistance program and how the investment program will help the government in achieving its strategic goals and address the challenges identified;  

   (v) Summarize the factors that promote and/or limit successful sector performance and service delivery, including the government’s policy, institutional, legal, and regulatory frameworks; the role and capacity of concerned agencies (including for managing the results), the critical areas for developing capacity, and the commitment to institutional reform; recent trends in current and capital expenditures, including the type and composition of expenditures (developmental, recurrent, and others); the roles of the public and private sectors; pricing policy; the sustainability of investments; and the possibility of resource allocation with the sector;  

   (vi) Briefly address the social dimensions, environmental considerations, safeguards, and governance issues in sector management;  

   (vii) Summarize recent ADB and development partner engagement and lessons learned. Briefly discuss ADB’s strategic vision for the sector, citing current and planned ADB assistance and identifying possible investment opportunities and interventions for ADB, as well as prospects for joint cooperation with other development partners including information on envisaged future tranche releases.

b. **Financial Analysis**

   (i) Review the cost estimates of each ensuing projects/programs, including operation and maintenance cost estimates;  

   (ii) Assess the financial viability of the proposed projects/programs. All activities will be conducted in accordance with ADB guidelines which can be downloaded from [https://www.adb.org/documents/financial-due-diligence-methodology-note](https://www.adb.org/documents/financial-due-diligence-methodology-note).

c. **Financial Management Assessment**

   (i) Undertake a financial management assessment of the EAs in accordance with ADB guidelines which can be downloaded from

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4 Two of the ensuing projects are being considered to be designed as MFFs, namely: Northern region road corridor from Wutung to Angoram (Momase international highway), and Highlands Region Road Improvement Investment Program, Phase 2.

(ii) Based on such assessment identify and evaluate financial management and internal control risks at the project/program level;

(iii) Propose risk mitigation and management strategies and/or activities with appropriate timelines and suggested responsibilities.

d. **Procurement Risk Assessment and Procurement Planning**

(i) Review and update if necessary the Country and Sector/Agency Procurement Risk Assessments;

(ii) Assess strengths and weaknesses in project procurement practices and capacity from the perspective of (a) organizational and staff capacity; (b) information management; (c) procurement practices (goods and works, consulting services and payment practices); (d) performance of e-procurement system or (plans to introduce one); (e) effectiveness; and (f) accountability measures;

(iii) Identify and evaluate procurement risks at the project level in accordance with ADB guidelines which can be downloaded from https://www.adb.org/sites/default/files/procurement-risks.pdf;

(iv) Propose risk mitigation and management strategies and/or activities;

(v) Propose sector specific procurement thresholds for each ensuing project/program;

(vi) Prepare a procurement strategy for ensuing projects/programs following the ADB’s Guidance Note on Strategic Procurement Planning: https://www.adb.org/sites/default/files/procurement-planning.pdf;

(vii) Prepare a procurement plans for identified subprojects and include brief description of each package justifying their scheduling, procurement method, prequalification if required, bidding procedures, and review requirements. The procurement plans shall be suitable for the recommended project management arrangements for the projects and programs and they should be in line for the potential support to be provided to the executing agencies and implementing unit;

(viii) Ensure the consistency of the procurement plan and bidding documents prepared by the PRF consultants. All pertinent information on procurement should be included in the Facility Administration and Project Administration Manuals.

e. **Climate Risk Vulnerability Assessment**

(i) Review of proposed investments. Review and collate all relevant documentation and baseline data (climate and hydrological data, draft designs, specifications etc.);

(ii) Develop a methodological framework for climate change related studies pertinent to the context and objective for climate risk assessment and management of the projects/programs taking into account the overall timeline of the project/program preparation;

(iii) Develop detailed scenarios based on climate change variables as required for future time horizons pertinent to the needs and objectives of the projects/programs (e.g. using CMIP5 data or other sources as appropriate, and consulting more recent estimates for sea level rise) and methodological approaches, including documentation of scenario method, data sources, uncertainties and caveats;

(iv) Develop simplified “best estimate” and “high case” scenarios for the key parameters and associated hazards under climate change for the lifetime of the programs/projects, using most current and relevant regional climate projections available;
(v) Assess the vulnerabilities of the programs/projects and the associated risks to the structural components of the projects under these scenarios, including implications for performance and operation;

(vi) Identify adaptation options appropriate to project conditions and design objectives, including structural and non-structural approaches and interventions along with estimations of monetary benefits where feasible;

(vii) Prepare a detailed technical report on the climate risk assessment, including the overall methodology, data used, assumptions made, key findings and their implications for the program/project preparation, caveats/limitations of the study and their implication for the program/project preparation;

(viii) Prepare a detailed estimate of incremental adaptation costs;

(ix) Prepare other documentation related to climate change required for the ADB Report and Recommendation of the President (RRP) including Linked Document “Climate Change Assessment” (e.g. climate change adaptation and mitigation measures including cost estimates and implementation arrangements).

f. Project Risk Assessment and Risk Management Plan

(i) Review and update the preliminary risk assessment prepared by the PRF consultant;

(ii) Review the country and transport sector governance risk assessments prepared for the country partnership strategy, and determine if the risks identified in these assessments are applicable to the project;

(iii) Identify and summarize all risks, comprising (a) technical, (b) economic and financial, (c) governance comprising financial management, procurement, anticorruption, capacity, and institutional, (d) poverty, social, and gender, and (e) safeguards.

(iv) Assign each risk with a relevant risk rating according to the probability of occurrence and the severity of effect on the project if they do occur;

(v) Identify and propose mitigation measures for each risk;

(vi) Specify major actions planned and the responsible agencies, including timeline, for the mitigation measures;

(vii) Prepare a draft risk assessment and risk management plan of the report and recommendation of the President (RRP) for each ensuing project.

g. Capacity Strengthening

(i) Assess the status of governance and project implementation capacity depending on the modality of ensuing projects.

(ii) Design and implement a workshop (1 or 2 days) for relevant governmental agencies on good governance, institutional change management, monitoring, implementation and evaluation of the investment projects and programs, results management and reporting.

6. Activity 5. Ensure the integration of the poverty and social development component into the overall project design

32. The Consultant will review the proposed design for the poverty and social development component to ensure its alignment with the overall scope and design of the ensuing projects. It will also assist in addressing gaps as required to finalize the proposed component. The Consultant will be responsible for ensuring that the poverty and social development component will be integrated into the ensuing programs/projects and considered, if necessary, into all the project analysis, project cost estimates, procurement, facility administration manuals (FAM), project
administration manual (PAM) and bidding documents working closely with the consulting team responsible for designing this component.

7. **Activity 6. Assist ADB to prepare approvals**

33. The Consultant will draft the facility administration manuals (FAMs) and project administration manual (PAM) for the ensuing programs/projects using the ADB templates. The PAM should have the detailed project scope and description, including but not limited to: (a) project implementation plan and schedule, (b) project management and project steering committee arrangements, (c) detailed cost estimates and financing plan and corresponding tables, (d) funds flow and disbursement mechanism, (e) procurement plan, (f) financial management and reporting, (g) environmental safeguards requirements, (h) social safeguards requirements and gender action plan. The FAM will mainly follow the similar structure than PAM, to the extent possible, but will also include MFF implementation details such as the indicative tranche number, sequence and amounts, and implementation arrangements.

E. **The Consultant’s Team Composition**

34. The Consultant needs to prepare work schedules and assign strong multi-disciplinary teams in a way which ensures that the final designs will reflect the recommendations of safeguards assessment including integration of mitigation measures into design and that the programs/projects are ready for ADB approval. An association with a suitable domestic consultant is encouraged to compliment consultant’s local knowledge and experience.

35. The Consultant will determine the number, effort and the nature of experts required to achieve the objectives of this TOR, in accordance with their proposed approach and methodology. However, the technical evaluation will consider the qualifications and experience of the key experts listed hereunder. Minimum desirable qualifications and experience of the key experts are given below.

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<th>Key Positions</th>
<th>Minimum Qualification Requirements</th>
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<td><strong>International</strong></td>
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<tr>
<td>Team Leader / Highway Engineer</td>
<td>University degree or equivalent professional qualifications in civil engineering. Minimum of 20 years’ overall experience. Minimum of 15 years in preparing highway projects and minimum of 5 years as a team leader leading multi-disciplinary teams of experts, and preferably has experience in projects funded by international financing institutions. Experience in developing countries and working with development agencies is preferred. Experience in the Pacific is an advantage.</td>
</tr>
<tr>
<td>Port Design Engineer</td>
<td>University degree or equivalent professional qualifications in civil engineering. Minimum of 20 years’ overall experience. Minimum of 15 years’ experience in design and project management of maritime projects, including extensive experience in port design projects as an design engineer and/or project manager. Experience as a team leader and experience in projects funded by international financing institutions are preferred. Experience in the Pacific is an advantage.</td>
</tr>
<tr>
<td>Highway Engineer</td>
<td>University degree or equivalent professional qualifications in civil engineering. Minimum of 15 years’ overall experience. Minimum of 10 years in highway design projects. Experience in projects in developing countries funded by international financing institutions is preferred. Experience in the Pacific is an advantage.</td>
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<tr>
<td>Geotechnical Engineer</td>
<td>University degree or equivalent professional qualifications in civil engineering. Minimum of 15 years’ overall experience. Minimum of 10 years in highway design projects, including extensive experience as a geotechnical engineer. Experience</td>
</tr>
</tbody>
</table>

Key Positions Minimum Qualification Requirements

in projects in developing countries funded by international financing institutions is preferred. Experience in the Pacific is an advantage.

36. All key specialists are required to provide their services full-time in the field of minimum of 80%. Home office input can be used only to provide responses/clarifications on the deliverables or remaining work does not require field presence. Only one curriculum vitae (CV) must be submitted for each key and non-key expert included in the proposal. Only the CVs of key experts will be scored as part of the technical evaluation of proposals. The CVs of non-key experts will not be individually scored, however all CVs of non-key experts positions in the proposal will be reviewed and individually approved or rejected and the suitability of the bidders proposed team will be considered.

37. The Consultant will include in their technical proposal, work plan and financial proposal all other supporting staff including administrative and office staff, drivers, etc. necessary to achieve the objectives of the TOR in accordance with Consultant’s proposed approach and methodology. The Consultant must also determine and indicate the number of person-months for which each key or non-key expert will be required. The amount of time spent on field by any of the key positions (in aggregate) will be taken into account when evaluating the approach and methodology and personnel schedule.

38. The recruitment will be fully undertaken within ADB’s Consultant Management System. The “minimum” person-months shown in the data sheet are required from a systems perspective and do not represent the expected inputs of the Consultant.

F. Outputs, Deliverables and Payment Milestones

39. The consulting services will be implemented over 30 calendar months from the commencement date.

40. The following reports, in English language, will be submitted in format and copies as stipulated in the contract. Expected timelines for deliverables are from the issuance of Notice to Proceed. A detailed outline for each deliverable will be agreed in the contract based on the firm’s approach and methodology. Tentative milestone payment percentages are subject to verification at contract negotiations. All components of each item must be completed to qualify for a milestone payment.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Deliverable</th>
<th>Submission deadline</th>
<th>Milestone Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6</td>
<td>Inception Report</td>
<td>1 month</td>
<td>5%</td>
</tr>
<tr>
<td>1-6</td>
<td>Quarterly Progress Reports</td>
<td>Quarterly</td>
<td>-</td>
</tr>
<tr>
<td>4a</td>
<td>Sector Assessment</td>
<td>3 months</td>
<td>5%</td>
</tr>
<tr>
<td>4c, 4d, 4e, 5</td>
<td>Financial Management Assessment</td>
<td>6 months</td>
<td>15%</td>
</tr>
<tr>
<td>4c, 4d, 4e, 5</td>
<td>Procurement Risk Assessment and Procurement Planning</td>
<td>6 months</td>
<td>15%</td>
</tr>
<tr>
<td>4c, 4d, 4e, 5</td>
<td>Climate Risk Vulnerability Assessment</td>
<td>6 months</td>
<td>15%</td>
</tr>
<tr>
<td>1, 3, 4b, 5</td>
<td>Review Report for the Feasibility Study, Risk Assessment and Risk Management Plan, and Financial Analysis for Wutung-Angoram road section and Vanimo and Wewak ports</td>
<td>7 months</td>
<td>15%</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Activity</th>
<th>Deliverable</th>
<th>Submission deadline</th>
<th>Milestone Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 4b, 5</td>
<td>Review Report for the Feasibility Study, Risk Assessment and Risk Management Plan, and Financial Analysis for Lae-Malalaua road section</td>
<td>10 months</td>
<td>10%</td>
</tr>
<tr>
<td>2, 3, 5</td>
<td>Review Report for the Detailed Engineering Design for the Wutung-Angoram road and Vanimo and Wewak ports</td>
<td>16 months</td>
<td>15%</td>
</tr>
<tr>
<td>1, 4b, 5</td>
<td>Review Report for the Feasibility Study, Risk Assessment and Risk Management Plan, and Financial Analysis for HRRIIP roads</td>
<td>19 months</td>
<td>10%</td>
</tr>
<tr>
<td>2, 5</td>
<td>Review Report for the Detailed Engineering Design for Lae-Malalaua road section</td>
<td>19 months</td>
<td>10%</td>
</tr>
<tr>
<td>2, 5</td>
<td>Review Report for the Detailed Engineering Design for HRRIIP roads</td>
<td>28 months</td>
<td>10%</td>
</tr>
<tr>
<td>1-6</td>
<td>Final Report</td>
<td>29 months</td>
<td>5%</td>
</tr>
</tbody>
</table>

HRRIIP = Highlands Regional Road Improvement Investment Program, Phase 2

41. Each deliverable will be reviewed by the ADB technical assistance team and the concerned government office(s), who will be required to provide comments within 15 working days after the submission. If no comments received within maximum of 30 calendar days, the deliverable will be considered agreed. Upon acceptance as determined by ADB and EAs, the progress payments will be made according to the payment schedule specified in the contract. Deliverables will be provided as soft copies in MS Office and PDF formats, and hard copies will be provided to ADB and EAs as agreed in the contract. The payments will be made in accordance with ADB’s Loan Disbursement Handbook (2017, as amended from time to time).

G. Counterpart Facilities

42. DOWI and/or DOT will provide the Consultant with the following: (i) Access to data, records, and other information required, as available, to perform the assigned tasks; and (ii) Counterpart staff and engineers to coordinate with the Consultant’s team. However, the Consultant should assess the quality of available data, and will be responsible for further data collection, as necessary, to deliver the required outputs under this assignment.

43. All key experts will be required to travel to project sites to carry out studies, surveys, and meaningful consultations with EAs, all relevant government officials, and stakeholders in preparing the outputs. The Consultant will be responsible for providing office space and office equipment and services, including computers, laptops, printers, photocopiers, communications and internet connection to deliver the services and prepare the reports. The Consultant will make its own arrangements for local and international transportation and local accommodation of its staff.