

DRAFT TERMS OF REFERENCE

DISASTER AND CLIMATE-RESILIENT ROAD PROJECT

CONSULTANCY SERVICES FOR THE PREPARATION OF FEASIBILITY STUDIES, DETAILED DESIGNS AND CONSTRUCTION SUPERVISION - SAINT VINCENT AND THE GRENADINES

1. INTRODUCTION

1.01 St. Vincent and the Grenadines is an archipelagic state, which forms a part of the Windward Islands chain of volcanic islands in the Eastern Caribbean, comprising the main island, Saint Vincent, and a chain of 32 islands and cays. The total area of the country is 389 square kilometres (sq. km), of which the main island is 344 sq. km. The country is considered a small island developing state (SIDS) with an estimated population of approximately 104,000. It is located approximately 160 km west of Barbados.

1.02 The Ministry of Transport, Works, Land and Surveys, and Physical Planning (MTW) is directly responsible, through its Public Works Department (PWD), for the development and maintenance of the road network in SVG with the exception of the roads in private sub-divisions.

1.03 The Government of Saint Vincent and the Grenadines (GOSVG) is seeking to construct or upgrade the following three roads:

- (a) the proposed L'anse Mahaut - Wallilabou Bypass Road, in Saint Vincent;
- (b) Arnos Vale/ET Joshua Bypass Road, in Saint. Vincent; and
- (c) Bluff Road, Paget Farm, in the sister island of Bequia.

1.04 The proposed L'anse Mahaut Wallilabou Bypass Road will consist of double 3.5m wide travels lanes, drainage structures and bridges as required and road safety features. Wallilabou village is at the northern end of the Leeward Highway (LH), which is approximately 40.5 km long and stretches along the leeward coast from the capital, Kingstown, to the village of Richmond on the northwestern coast. The map of the proposed location of the bypass road is at Appendix 10.

1.05 Arnos Vale/ET Joshua Bypass Road will undergo rehabilitation and upgrade of existing road to enhance traffic flow, climate resilience and road safety. In addition, works will also include the replacement of an old, single-lane steel bridge.

1.06 Bluff Road is slated for realignment to mitigate the impact of climate change. Although a feasibility study and detailed designs were completed in 2016, the recommended design solution was never implemented.

2. OBJECTIVES

2.01 The objective of the consultancy is to assist GOSVG with the preparation of a project for the construction or rehabilitation of the identified roads, including the preparation of detailed engineering designs, bidding documents, cost estimates and construction supervision.

3. SCOPE OF SERVICES

3.01 The scope of services is understood to cover all activities necessary to accomplish the objectives of the consultancy, whether or not a specific activity is cited in these Terms of Reference (TOR). The activities and roads under consideration include preparation of feasibility studies, design designs and bidding documents, including all necessary surveys, investigations etc., to upgrade Fenton to Greenhill Road. The services are to be conducted in accordance with generally accepted international standards and professional practices acceptable to GOSVG. The activities and roads under consideration include:

- (a) L'anse Mahaut Wallilabou Bypass Road (approximately 4km) – preparation of detailed designs and bidding documents for a new road through virgin mountainous terrain, commencing with a feasibility study and all necessary topographic and geotechnical surveys and investigations, and construction supervision;
- (b) Arnos Vale/ET Joshua Bypass Road (0.25km) - preparation of detailed designs and bidding documents to upgrade existing paved road across decommissioned runway, review of replacement bridge design, intersection designs at both ends of bypass road, including all necessary surveys, investigations, and construction supervision;
- (c) Bluff Road, Paget Farm – review of proposed alignment designs (two), upgrade of selected design where necessary and preparation of bidding documents for new horizontal alignment of the Bluff Road, including all necessary surveys, investigations, and construction supervision

3.02 The scope of services to be provided by the Consultant will include, but not be limited to the:

Phase I

- (a) **Review of previous studies undertaken for the listed roads**
- (b) **Corridor Characterisation and Data Collection:**
 - (i) researching, collecting and analysing existing topographic, land use, hydrological, meteorological, geological, environmental, climatological, aerial imagery, demographic and hazard event data and studies to characterise the corridor;
 - (ii) determination of existing traffic volumes on the road;
 - (iii) defining principal hydrological attributes along the corridor;
 - (iv) inventory and mapping of critical infrastructure and key land uses and social and economic activities along the corridor; and
 - (v) site visits and field data collection, for data collection and for validation of existing topographic and socioeconomic information, as required.

(c) Field surveys and investigations to suitably inform the design process, in particular:

- (i) soil and geotechnical surveys;
- (ii) bridge condition assessment surveys, as required;
- (iii) slope condition assessment surveys;
- (iv) topographical surveys;
- (v) hydraulic surveys; and
- (vi) traffic surveys to determine traffic volume, traffic characteristics, and origin and destination data; and traffic surveys and forecasts to the year 2049, taking into consideration, *inter alia*, average daily traffic, land use plans, average annual traffic growth (include basis for growth rate assumed) and congestion parameters, if applicable.

(d) Stakeholder Consultations:

- (i) developing and executing a Stakeholder Engagement Plan (SEP). This should include conducting a stakeholder analysis to identify all relevant stakeholders who may be affected by or have interest in the project. Subsequently utilise consultative and differentially participatory stakeholder engagement activities periodically at appropriate points of the Project with primary and secondary stakeholders including, *inter alia*, community leaders, community groups, residents, business operators, ministerial departments and agencies and any other relevant parties;
- (ii) conducting relevant and timely engagement activities including separate meetings for women and men in the communities, as necessary, and their representatives at the community and national level;
- (iii) consulting with the stakeholders listed above to solicit their perspectives, concerns, perceived current needs, aspirations and priorities, as well as their input to and feedback on proposed designs, implementation and operationalisation; and
- (iv) drafting of a consultation summary report covering the full range of consultative or engagement activities executed over the period and relevant to section d (i, ii, iii).

(e) Climate Risk and Vulnerability Assessment:

3.03 The objective of the Climate Risk and Vulnerability Assessment (CVRA) is to identify and evaluate the potential effects of climate change on the roads, the surrounding watersheds and communities, and recommend and cost resilience measures to address the identified vulnerabilities and ensure that they are reflected in the designs. The consultant should undertake a quantitative analysis that includes the following:

- (i) Scope of the assessment: Determine the scope of the assessment in order to establish a clear context and realistic boundaries. This will include the spatial scope (for example, transport corridors, watersheds and coastal zone of interest), relevant transport assets, communities affected and time horizon with regard to the

timescales of the climate variables of interest and the life cycle of the proposed project investment. The consultant should begin with a consultation with stakeholders to get a better understanding of the nature of the climate risk and adaptation issues, especially the historical experience of climate-related hazards and the response and to agree on the scope.

- (ii) Establishment of an exposure database: The data assembled in (3.01 b) above will be required for the CVRA particularly for the analysis of exposure. The goal here is to identify the parts of the system that could be subject to climate change impacts, including infrastructure, people, environment, etc. and determine climate resilience measures in the design of the project.
- (iii) Hazard identification and assessment: This involves characterisation of relevant climate variables and establishment of a climate baseline. The consultant will undertake an in-depth assessment, combining an analysis of historic events and current conditions, in order to establish a climate baseline with an analysis of future conditions (mid-century as well as the design life of the investment), using scenario-based methodologies. The consultant shall specify the source of all climate data. Downscaled regional or site-specific temperature and rainfall projections can be obtained from several sources including but not limited to the Caribbean Community Climate Change Centre and intensity-duration-frequency (IDF) curves can be obtained from the local Met Office, the Caribbean Institute for Meteorology and Hydrology, or the Climate Studies Group Mona based at University of the West Indies, Mona Campus. Data on Sea Level Rise, if not available for St. Vincent and the Grenadines, could be obtained from studies conducted in other parts of the Region by National Oceanic Atmospheric Administration, for example. Country level data could also be obtained from the World Bank's Climate Change Knowledge Portal. The CARIBSAVE partnership has also modelled storm surge at various locations. Climate variables could include, but not necessarily limited to the following:
 - (aa) sea level and wave action (for coastal portions of the road);
 - (bb) precipitation intensity; considering and factoring available historic precipitation data, climate model forecasts and scenarios, catchment surface area, topography, soil conditions,
 - (cc) peak rainfall events (for designing stormwater drainage);
 - (dd) temperatures;
 - (ee) profiles of past extreme weather events; The consultant will be expected to provide advice on the appropriate recurrence intervals for meteorological events impacting the proposed design of the infrastructure;
 - (ff) changes to the onset of rainy seasons (for road maintenance and construction scheduling); and
- (iv) The consultant is expected to apply various tools such as hydraulic, hydrologic, topographic and bathymetric, to understand the effect of climate variables on the system including surrounding watershed areas (especially with regard to landslides, and coastal flooding). Other variables such as patterns of spatial development, and ecosystem decline should also be considered.

- (v) Hazard maps should be used to illustrate levels of probability of the hazard occurring, showing the spatially distributed expected levels for different frequencies (i.e., 50-year, 100-year and 150-year return periods) and for different hazard types (coastal flooding, landslides, subsidence, gullying, storm surges, sea level rise, etc.). A simple flood vulnerability map could be prepared for the roadways, at minimum 1:5000 scale, or of a useful size relative to the study catchment, as determined with MTW and end-users, showing projected water levels for mid-century (2050) expected climate conditions identified above, current development activities, critical infrastructure and population at risk in the flood zones.
- (vi) Vulnerability Assessment: This assessment captures the susceptibility to harm and the ability (or lack of) to cope or adjust. It is also needed to identify management priorities and to develop adaptation actions. The vulnerability of the system is assessed through an analysis of sensitivity and adaptive capacity:
 - (aa) *Sensitivity Assessment*: Sensitivity of the elements at risk determines the extent of damage or service interruption that can be anticipated for a given impact. The sensitivity assessment seeks answers to questions: How much will the hazard affect the Project and its' elements at risk? How well can the Project/system maintain its function and deliver its mandate. For example, what is the likely frequency of road disruption due to a given climate hazard? How will important transport corridors be affected? The main task will include an assessment of prospective sites for susceptibility to the effects of projected climate change for the reference variables described above and for different climate scenarios, each ranked accordingly. The assessment should include consideration of the susceptibility of the surrounding watersheds, communities and supporting infrastructure.
 - (bb) *Adaptive Capacity*: The vulnerability assessment will also consider human/social, economic, institutional, and environmental dimensions. For example, how adequate are existing O&M budgets? How frequent and effective is the maintenance schedule?

Based on the analyses above, the consultant will identify and rank key vulnerable segments of the roads network, given the susceptibility to projected climate change and the capacity to adjust to or manage these impacts. The consultant will hold workshops with relevant stakeholders to discuss and reach agreement on these findings.

- (cc) *Risk Assessment*: The risk assessment is a quantitative expression of the vulnerability assessment; the consequences of the hazards, in economic and social impact terms, on the asset are weighted by the likelihood of occurrence of the hazard. A priority listing or ranking of the various elements of risks should be made, according to potential impact and likelihood of occurrence. A decision matrix may also be prepared which shows risk management options and priorities.

- (vii) Adaptation Assessment: The consultant should identify key vulnerable hotspots and provide cost estimates for the most appropriate resilience/ climate adaptation measures that could be incorporated into the Project in order to address the vulnerabilities and risks identified above. The consultant will prioritise the identified adaptation measures. An economic evaluation should be conducted to show the likely economic impacts of possible damage in the absence of adaptation as well as cost-benefit analysis of each technically feasible option, and/or a cost-effectiveness analysis if the adaptation options are expected to deliver the same benefits. The consultant shall also prepare Operations and Maintenance Plans (OMP) and Operations Continuity Plans (OCP), as part of a comprehensive disaster risk management approach to reduce disaster risk and to respond to and recover from disasters.
- (viii) Reporting: The consultant will prepare a detailed report on the CRVA, including a description of the methodology used. This report will be used as a basis for discussion with MTW and key stakeholders and for agreeing on the adaptation measures.

(f) Environmental and Social Impact Assessment

- (i) Conduct an Environmental and Social Impact Assessment (ESIA) of the proposed works as per CDB's Environmental and Social Review Procedures (ESRP). ESIA should involve broad stakeholder consultation as per item (3.01 d) above. It should include:
 - (aa) conduct of an ESIA inclusive of the consideration of natural hazards of proposed works. The assessment will consider potential significant environmental and social and gender impacts (including ecological, archaeological, historic, and cultural heritage resources). Specific requirements of the relevant policies, legislation, and regulations which have implications for the project activities, should be identified. Distinguish construction and post construction phase impacts, short-term and long-term impacts, positive and negative impacts, and direct and indirect impacts. Identify the significant impacts and those that are cumulative, unavoidable, or irreversible. Consultants will be required to provide specific feasible and cost-effective mitigation measures including monitoring requirements for all significant negative environmental impacts identified for both the construction and operational phases of the Project;
 - (bb) preparation of a sex-disaggregated demographic profile of communities along the corridor including socioeconomic, poverty status, individual and community characteristics including disability status, crime, gender-based violence, and health issues. Areas with high densities of population especially the poor and other groups of vulnerable people will also be identified;
 - (cc) identification of key employers, employment patterns and livelihood activities (formal and informal) in the communities with clear identification of opportunities to reduce poverty and promote equitable, inclusive employment and development through the implementation and

operational phases of the Project with attention paid to identifying safety risks to road-side vending operations with recommendations to maximise benefits derived from livelihood activities;

- (dd) clear identification of any potential adverse social impacts of the Project (both main route and by-pass routes) with keen attention paid to economic, social, political, environmental and health impacts both for individuals, vulnerable groups such as the poor, women, children, indigenous people, persons with disabilities and seniors and the community as a whole;
 - (ee) identification of risks and vulnerabilities during implementation and operation, including those linked to projected climate change and other unforeseen changes, in the following areas including *inter alia*: housing; economic activities; employment opportunities; livelihoods; labour force participation; market conditions, shelter management; natural hazards; security and violence (including gender-based); education; health; transportation; cultural and archeologically heritage; wildlife habitat; and water, sanitation, and drainage;
 - (ff) investigating gender-specific risks and vulnerabilities and gender-specific coping mechanisms, including those linked to projected climate change;
 - (gg) analysing of both qualitative and quantitative socio-economic benefits; and prioritising community risks and vulnerabilities and community priorities for potential investments. Include women and men equally in public consultations as well as stakeholders representing the various groups including youth, indigenous people and persons with disabilities (PWDs);
 - (hh) Additional guidance on the preparation of the ESIA are at Appendix B of this TOR.
- (ii) Preparation of an Environmental and Social Management Plan (ESMP), including recommended mitigation measures, recommended measures to facilitate social benefits, SEP and communication strategy, gender action plan (GAP), consultation summary and grievance redress mechanisms (GRM), resettlement action plan (RAP) as required, and preparation of a draft Extreme Weather Management Plan (EWMP) for inclusion in the tender documents. EWMP should provide recommendations on management practices to minimise the impacts of extreme weather on the construction phase of the Project;
- (g) **Disaster Risk Assessment**
- (i) Slope Hazard and Vulnerability Analysis
 - (aa) Demarcation and agreement of critical hot spots in consultation with MTW.
 - (bb) Review of past road sector maintenance plans and any future transportation sector development plans.

- (cc) Characterisation of the hazard and vulnerabilities of the agreed critical hotspots to landslides/slope failures, factoring in:
- past landslide assessment studies, inventories and maps;
 - available topographic and survey data;
 - consequences and probabilities - the primary roads and their associated infrastructure at risk; the relative socio-economic importance of the road; the importance and relevancy of the road in the context of the transport sector; and in facilitating access;
 - current landslides and slope instability potential;
 - geomorphologic and geotechnical factors such as size, shape, volume, run-out distance, movement and material types, activity/state, damage corridor width, paths, drainage, soil stratigraphy, relevant primary and secondary triggering factors, and probability of failure;
 - site specific geotechnical and survey assessments at critical sites; and
 - available climate change information.

(h) Feasibility Study

- (i) Prepare feasibility level cost estimates.
- (ii) Conduct traffic counts and origin and destination surveys and prepare projections to the year 2049. Review development plans and assess their impact on future traffic volumes and overall economic impact; and using the Highway Development and Management (HDM) IV Model or Road Economic Decision (RED) model to evaluate improvement and maintenance options. Identify the relevant economic costs and benefits and determine the Net Present Value (NPV) for alternatives. An analysis period of 20 years and a discount rate of 12% are required and should consider multi-criteria considerations. In evaluating the options, the consultant(s) will be required to carry out the following services:
- (aa) developing a complete input data set for performing HDM quantitative analyses of the road improvement and maintenance options;
- (bb) selecting a set of possible maintenance and construction policies and define the strategies to be employed;
- (cc) providing detailed calculations of any exogenous costs/benefits for input into the model;

- (dd) calibrating HDM IV model for Saint Vincent and the Grenadines' conditions;
- (ee) updating the technical and economic parameters and run the HDM IV Model, as well as calculate economic rates of return and NPV for the proposed options; and
- (ff) ensuring that a more effective maintenance plan is employed, by MTW, by developing a maintenance management plan with a cost assessment for the medium to long term.

(i) Preparation of Preliminary Designs

Preliminary Road Design

- (i) Based on hydrological modelling, geotechnical assessments, taking account of potential climate change impacts, and in consultation with MTW, recommend optimal options for upgrading the road and its drainage features. The consultant must also demonstrate how climate change or any other unforeseen risks and associated capital costs considerations have altered the proposed design (i.e., the specific changes in design in order to take account of climate change).
- (ii) Prepare a Road Safety Assessment (RSA) of existing roads to be upgraded. The outputs of the RSA are to be incorporated into the designs.
- (iii) Prepare cost and quantity estimates for MTW agreed preferred option at the respective sites. The consultant should also perform a least-cost analysis and consult with MTW to determine the event horizon to be utilised in the design criteria.
- (iv) Update financial and economic analysis prepared for the feasibility assessment.

Bridge Designs

- (v) The consultant(s) shall ensure that with regard to bridges to be rehabilitated or constructed, evaluation and design of the bridge works have been undertaken in accordance with guidelines published by the American Association of State Highway and Transportation Officials (AASHTO) or similar authoritative international guidelines acceptable to GOSVG and CDB.
- (vi) With regard to new bridge and culvert structures, the consultant will ensure that alternative design options have been developed and considered utilising approved national standards, relevant international specifications and guidelines or other authoritative, international design standards/references acceptable to GOSVG and CDB, such as AASHTO standards. The alternatives will assume a minimum 75-year structural design life for new structures, and will adhere to international guidelines, such as AASHTO, as follows:
 - (aa) backwater will not significantly increase flood damage to property upstream of the crossing;

- (bb) velocities through the structure(s) will not damage either the road facility or increase damages to adjacent property;
- (cc) maintain the existing flow distribution to the extent practicable;
- (dd) pier spacing and orientation, and abutment designed to minimise flow disruption and potential scour;
- (ee) foundation design and/or scour countermeasures to avoid foundation failure due to scour;
- (ff) under clearance at structure(s) designed to allow unhindered passage of anticipated debris;
- (gg) minimal disruption of ecosystems and protect values unique to the floodplain and stream; and
- (hh) provide a level of traffic service compatible with what is commonly expected for the class of highway and projected traffic volumes and pedestrian use; and provide appropriate safety features on the bridges and their approaches.

(j) Preparation of Detailed Designs – Road and Bridge Construction and Tender Preparations:

3.04 Based on MTW agreed preferred option at each site, prepare detailed designs for the works. The scope of work shall include, but not be limited to, the following main activities:

- (i) Developing design criteria for the carriageway, its geometry, drainage and structural elements. The criteria shall consider the findings of the CRVA and ESIA to ensure that designs are climate resilient, gender inclusive and socially responsible.
- (ii) Obtaining subsurface soils and topographical information.
- (iii) Preparing designs of works to be incorporated into the Project.
- (iv) Using the results of the road safety assessment and the gender analysis, identifying necessary improvements to road safety street furniture (guard rails etc.), road lighting, sidewalks, pedestrian crossings, position of safe bus stops, signage, road markings and parking.
- (v) Environmental, social and natural hazard management parameters, which are to be defined during the engineering studies, shall be highlighted, identified and incorporated into the final designs.
- (vi) Preparing construction specifications for all the works shown on the drawings for which the consultant is responsible. The specifications shall be clear and concise with a statement setting forth the general scope of work, followed by a description of the various classes of work, under appropriate sections and headings. The

quality control requirements required of the contractor, will be described in detail, including identifying standards or codes that are to apply.

Pre-qualification and bid documents will be prepared in accordance with CDB's Standard Bidding Documents for Procurement of Works. These documents should be adapted to reflect the requirement to select a qualified and experienced contractor with regards to Environmental, Social, Health and Safety (ESHS) worksite management, provide for comprehensive ESHS Specifications for worksites, provide specifications for HIV/AIDS and gender-based violence awareness training for the contractor's and sub-contractors' personnel, and associated cost schedules.

- (vii) Providing the client with an engineer's cost estimates based on the final designs. This should indicate the anticipated division between local and foreign costs, and identify the incremental costs associated with climate adaption.
- (viii) Submitting the plans and specifications, for approval to the client and the appropriate authorities, as required. Attend meetings at the offices of GOSVG and authorities to discuss the designs and provide explanations for the purpose of furthering approvals.

4. IMPLEMENTATION ARRANGEMENTS

4.01 The Project is to be executed by the PWD of the MTW, which will be supervised by a Project Coordinator (PC) appointed by MTW. PC will facilitate the work of the consultants and make available all studies, reports and data relevant to the completion of the exercise and will act as liaison between the consultants and GOSVG officials and stakeholders.

4.02 The consultant's team should consist of the following key experts:

- (a) **Key Expert 1: Team Leader/Highway Engineer** with preferably ten (15) years' experience of carrying out feasibility studies, detailed design, conducting road safety audits, and in the preparation of procurement documents for road projects. The Highway Engineer would preferably have a bachelor's degree in civil engineering with professional qualifications or master's degree in the highway engineering. The candidate must have performed the function of Team Leader on at least two (2) similar projects within the past seven (7) years.
- (b) **Key Expert 2: Structural/Bridge Engineer:** with preferably ten (10) years' experience of carrying out the structural design of bridges. The Structural/Bridge Engineer shall a bachelor's degree with professional qualifications. A master's degree in structural or bridge engineering would be preferred.
- (c) **Key Expert 3: Hydraulics Engineer/Hydrologist:** with preferably seven (7) years' experience of carrying out hydrological modelling of drainage basins, preparation of feasibility studies and the detailed hydraulic design of bridges, drainage structures and river training works. The Hydraulics Engineer/Hydrologist would preferably have a bachelor's degree with professional qualifications.
- (d) **Key Expert 4: Geotechnical Engineer:** with preferably ten (10) years' experience in slope designs, road design and road and slope construction with five (5) years' experience in

countries similar to Saint Vincent and the Grenadines, Caribbean Region or other Developing Region. The Geotechnical Engineer would require a BSc in Civil Engineering with a master's degree in Geotechnical Engineering, preferably with professional qualifications.

- (e) **Key Expert 5: Environmental/Climate Change Specialist:** with preferably seven (7) years' experience of carrying out ESIA, climate change impact assessments, and the development of Environmental Management Plans for road projects. The Environmental Specialist would preferably have a master's degree in environmental sciences, environmental engineering, environmental management or related discipline, experience in disaster risk mitigation and in carrying out ESIA in accordance with the policy, guidelines and requirements of International Financing Institutions (IFIs);
- (f) **Key Expert 6: Social and Gender Impact Specialist:** with preferably seven (7) years' experience of carrying out social and gender impact assessments of transport infrastructure projects. The Social and Gender Impact Specialist would preferably have a master's degree in social sciences, development studies, gender studies or related discipline, experience in gender analysis, experience utilising participatory approaches to perform social and gender analysis, and experience in preparing associated social impact assessments in accordance with the policy, guidelines and requirements of major IFIs.

4.03 It is the consultant's responsibility to ensure that the team has an appropriate mix of key and non-key experts (including a transport economist) required to satisfy the requirements of the Terms of Reference (TOR).

Reporting Arrangements/Outputs

4.04 Reports shall also be submitted in PDF as complete documents, as well as in Microsoft Word and Excel, AutoCAD, and/or other formats used in their creation. Electronic copies of all data used in the preparation of the reports shall also be submitted to GOSVG/MTW and CDB. The consultant will be required to submit the following number of reports, respectively:

- (a) **Inception Report:** Inception Report will be presented within 30 days after the signing of the contract. A suggested template is shown in Appendix A.
- (b) **CVRA Report:** It should include the site characterisation, climate change scenarios, hydraulic modelling, and the vulnerability analysis. It should include an analysis of drainage, hydraulic structures, slopes and roadway design options for the upgrading of the road based on various event scenarios. The draft report should be submitted for prior review.
- (c) **Feasibility Study Report:** The report shall include the following key components: a feasibility study; a financial and economic analysis, showing potential economic benefits; and revised costs to validate the continued feasibility. The consultant will be required to make a presentation of the feasibility study report to the GOSVG and CDB.
- (d) **Design Reports:** The draft Preliminary Design Report should consist of a preliminary design, cost and quantity estimates for the preferred option. The draft Final Design Report should consist of agreed detailed designs, revised cost and quantity estimates and all necessary bid drawings and documents, which should include a formal draft ESMP. The ESMP will include reference to specific climate change projections which are consistent with the eligibility criteria for CDB/IDB projects. This report should include, where

appropriate, the indicative costs likely to be associated with the maximisation of social benefits and execution of the various plans developed as part of the ESMP particularly the SEP, RAP, where relevant, GRM, GAP and a consultation summary. The consultants shall submit The Final Design Report within 14 days of receipt of comments from GOSVG/CDB on the Draft Final Report.

- (e) **ESIA Report:** The draft report should be submitted within six months of the start of the consultancy.

4.05 Comments on the Reports should be anticipated within four weeks of receipt and the consultant(s) will adjust the ongoing work according to the comments received. The consultants will revise the draft reports within one month of receipt and in accordance with the comments received. Reports should be submitted in three hard copies and electronically. The HDM IV data input files should also be provided.

5. MANPOWER, SCHEDULING AND COSTS

5.01 In estimating man-month requirements and cost of the services, the Consultants should ensure that the proposal takes full account of all of the above requirements and the following items:

- (a) Consultants' remuneration;
- (b) Consultants' out-of-pocket expenses;
- (c) support staff services;
- (d) equipment hires;
- (e) communication costs;
- (f) report production costs;
- (g) contract documentation production costs;
- (h) supervision costs;
- (i) survey costs; and
- (j) any other costs required to provide the services outlined in these TOR.

6. DURATION

6.01 Consultants are required to generate a time frame for the consultancy services based on the TOR. Consultants are advised that the duration of the consultancy will be a factor in the evaluation of the proposals.

APPENDIX A

Inception Report Template

The Consultant is free to format the contents of the inception report to his normal presentation, but the report shall at a minimum contain the following:

- Executive Summary
- Introduction
- Background and description of project
- Understanding of Project Objectives
- Contract signing and project commencement
- Team mobilization and project activities to date
- Data collection
- Data gaps
- Assumptions, Risks and Mitigation Strategy with regards to data gaps
- Comments on ToR and RFP
- Proposed Design Standards
- Project Organisation / Lines of communication
- Project execution, methodology and scheduling if different from proposal
- Suggested format for preliminary and final design reports
- Appendices e.g. Meeting details, Organisation Chart, ToR, Photographs etc.

APPENDIX B

Additional ESIA Information

ANNEXE A

SOCIAL ASSESSMENT AND GENDER ANALYSIS

1.01 The Social Impact Assessment should include a Social Assessment and Gender Analysis (SAGA), which will investigate risks related to the execution of a road construction project and inform possible mitigating measures to safeguard against social and gender risks. It will be conducted in a highly participatory, gender-inclusive manner engaging the communities, in particular representatives of women and men separately, and as necessary, so that both voices can be heard. Keen attention will also be paid to other social identities such as age, disabilities and socio-economic status. SAGA will also investigate key opportunities relating to the road project for positive social impact (e.g. poverty reduction, inclusive employment, safety and gender equality) and help inform measures to maximise such impacts. The issues to be considered/reported upon in the social and gender assessment should include, but not necessarily be limited to the following:

- (a) description of the project area including demographic, economic, topographical and socio-cultural data, disaggregated by sex and other categories of social identities (disability status, ethnicity, socio-economic status, age for example);
- (b) assessing the different economic and social activities of men and women in the communities adjacent to the Project and assess the effect of the Project on the economic and social activities (effect of increased access to transport, effect of construction phase);
- (c) reviewing secondary data including reports, studies, Country Gender Assessment, and relevant policy and legal documents including poverty assessments, census reports, labour force surveys, multi-indicator cluster surveys, and episodic hazard reports. Subnational secondary data will include population by sex and name of community, population density by community, school population by sex and name of school, livelihood opportunities by sex, and critical economic linkages in project areas;
- (d) collecting primary data through participatory approaches with all categories of stakeholders in order to introduce the Project, facilitate feedback, and gauge perception of the Project in order to gain and/or strengthen buy-in. Interviews, focus groups and other appropriate differential participatory methodologies may be employed for state and non-state stakeholders directly impacted by the works such as Community-Based Organisations, Non-Governmental Organisations, vulnerable groups, school personnel, private sector entities and relevant public agencies. Where applicable, focus groups may be convened for males and females, respectively. Facilitation of participation through the provision of transportation and childcare as well as appropriate timing should be ensured;
- (e) conducting site visit exercises to verify, update and fill gaps using community maps, transect walks, snowballing, as well as photographic documentation, and other appropriate participatory approaches;

- (f) enhancing public participation by identifying appropriate gender-sensitive public education communication strategies for providing information on project activities and progress to stakeholders, for receiving timely feedback and also by identifying and removing barriers to participation of the most vulnerable categories of persons (pre-project, during implementation and post-implementation);
- (g) identifying outstanding social issues and concerns in the project area, including current deficiencies in the transport arrangements – whether with respect to public transportation systems, or to the design of the infrastructure – that hinder women, children, persons with disabilities and the elderly to fully access services and markets. Assess the different transport patterns and modes of transportation used by women and men due to their different reproductive and productive tasks in the household and the economy;
- (h) assessing location for pedestrian crossings and need for cross-walks as well as the necessity of bicycle lanes or for seniors or persons with disabilities.
- (i) assessing current public transportation services covering the area, the impacts of the design of the project infrastructure on the public transportation network, and the potential needs of the population, including frequency and safety – disaggregated by sex and vulnerable groups like the elderly, disabled and children – with respect to transport services during works and after the works are completed, taking into account in particular the differing needs of women and men and other intersecting social identities (such as age, disability status) with regards to public transportation;
- (j) assessing the need and placement of bus stops from the perspectives of different population groups – women, men, persons with disabilities, the elderly, children also considering weather conditions;
- (k) assessing accessibility of the project area in keeping with universal design standards required for use by Persons with Disabilities (PWDs), and seek direct feedback from them on their requirements;
- (l) identifying any activity related to transactional and commercial sex in the project area and the possible effect of the construction work on transactional and commercial sex;
- (m) describing how the Project improves access to services and markets as well as enhances economic opportunities for women, men and vulnerable groups like the youth at risk, elderly and PWDs;
- (n) identifying time savings due to improved access to services and markets by sex, age and disability status and investigate how time would be used differently by women and men.
- (o) public illumination needs and the potential for preventing crime, including gender-based violence and sexual assault. Identify hot spots together with the police and the communities’ engaging women and men as they have different perspectives and advice on the placement of streetlights;
- (p) description of the potential impacts of the Project at its various stages (preparation, construction, and operation) on the social context in the immediate surrounding communities. Identify any issues pertaining to the design of the Project which may have social impacts (gender, livelihood or other dimensions);

- (q) assessing whether resettlement/replacement is necessary as an effect of the Project and identify possible gender effects considering the distribution of male- and female-headed households in the area and the distribution of land titles by sex as well as prevailing engagement in livelihoods activities. Identify possible gender-responsive resettlement and mitigation mechanisms;
- (r) analysis of the local labour force and the potential of engaging communities, in particular women, in the construction and maintenance of the Project;
- (s) assess economic activities or potential future economic activities by sex at the road and propose areas and costs for layby areas for road vendors.
- (t) analysing attitudes towards safe driving, drinking and driving, messaging and driving, speeding and driving, disaggregated by sex and age and feed the results into the Road Safety Audit to derive possible measures of mitigation;
- (u) discussing the adequacy of proposed mitigation measures and measures to enhance social and economic development and gender equality and/or proposed alternative designs for the project; and
 - (i) estimate the cost of these measures and justify their suitability; and
 - (ii) consider measures such as public education in the area of road safety or gender-based violence/HIV/AIDS awareness training; training opportunities for vulnerable people to take part in project activities; timing, frequency and safety of public transportation; workers code of conduct and GRMs; and public illumination.
- (v) preparation of a detailed monitoring and evaluation plan for monitoring the implementation and evaluating the measures proposed to enhance social and gender outcomes of the Project. Identify gender-responsive outputs and outcomes of the project activities to facilitate gender-responsive results monitoring and evaluation and develop a gender action plan with actions, indicators, costs of implementation; and
- (w) convening a stakeholders' validation workshop to discuss the findings of the consultancy and to seek consensus and clarification on issues from participants for incorporation in the draft final and final reports.

ANNEXE B

1.0 ENVIRONMENTAL IMPACT ASSESSMENT

1.01 The Environmental Impact Assessment (EIA) will assess the initial environmental assessment of the options proposed. This will include an assessment of baseline environmental conditions. The Assessment will consider potential significant environmental impacts (including ecological, archaeological, historic and cultural heritage resources), and the associated mitigation measures required for the proposed options. It will include an assessment of baseline environmental conditions as they relate to proposed solutions. Specific requirements of the relevant policies, legislation, and regulations which have implications for

successful implementation of any proposed options, should be identified. The baseline assessment should characterise significant natural hazards and existing vulnerabilities. The EIA will provide a full description of the context, components and activities of the proposed project, using maps at appropriate scales where necessary. This should include; a description of the location of the project, its infrastructure requirements etc.

1.02 In conducting a detailed EIA consideration will be given to the following elements:

- (a) natural hazards that may impact the proposed works;
- (b) distinguish construction and post construction phase impacts, short-term and long-term impacts, positive and negative impacts, and direct and indirect impacts;
- (c) identify the significant impacts and those that are cumulative, unavoidable, or irreversible; and
- (d) Identify impacts related to the road rehabilitation activities.

Methodology:

- (a) review of secondary data from reports, studies, hazard risk assessments, geotechnical surveys, hazard risk assessments, and relevant policy documents such as legislation, regulations, standards and policies in the related areas;
- (b) collection of primary data through participatory consultations with all categories of stakeholders in order to introduce the project, facilitate feedback, and gauge perception of the project. Information from the residents in the area on hazard history and impact, environmental impacts will guide in design and location;
- (c) field visits; and
- (d) Analysis and computation of data.

1.03 Specifically, the consultant will be required to:

- (a) provide specific feasible and cost-effective mitigation measures for all significant negative environmental impacts identified for both the construction and operational phases of the Project. The boundaries of the project area for the assessment, as well as any adjacent areas that should be considered with respect to the Project should be specified;
- (b) list and describe legislation and policies applicable to the planning, approval, construction and operation of the project. The consultant should identify all approvals, permits, licenses that will need to be obtained for the proposed project;
- (c) provide a baseline description of the affected environment - collect, evaluate and present baseline data on relevant environmental and social characteristics of the proposed project sites (communities), including the following:
 - (i) physical and biological environment: geomorphology, meteorology (rainfall, wind, surface hydrology, air quality; ambient noise; terrestrial rare or endangered

species, species of commercial importance, and species with the potential to become nuisances or vectors;

- (ii) conduct a detailed assessment of the potential environmental impacts of the proposed project related to the road upgrade. This should include distinction between significant positive and negative impacts, direct and indirect impacts, and immediate, medium and long-term impacts;
- (iii) identify impacts that are unavoidable and/or irreversible. The environmental impacts should be classified for both the construction and operational phases of the project. The main potential environmental impacts to be explored will relate but not limited to: geology and soils; hydrology, land use and land tenure, topography and landscape; land contamination; transport; air quality, water resources (quality and quantity); noise and dust nuisance, biological resources, public health and worker safety; and waste. The potential impact of the project on surrounding communities in relation to disruption to communication routes and public access should also be explored; and
- (iv) assess the vulnerability of project alternatives to natural and man-induced hazards events with particular attention during the construction and operation phases of the project. The assessment will include: characterisation of major natural hazards; documentation of the changing trends and patterns of the hazards; and a vulnerability assessment on existing and proposed infrastructure and.

1.04 This evaluation will be quantitative and specific to the proposed works where possible but provide a qualitative assessment at a minimum of incident scenarios. Details should be provided on safeguards to be implemented to minimise the likelihood and severity of hazards.

1.05 Recommendations should clearly specify measures that need to be included into the design and operation of the project to ensure its proper functioning throughout its lifetime considering the potential for extreme hazards impacts. The vulnerability assessment should highlight any limitations with data that may affect the outcome of the assessment.

1.06 Measures that are outside the scope of this project or cannot realistically be included at this time, but which do impair the long-term resilience of the project, system, or surrounding communities and ecosystems, should be made the subject of clear recommendations for future action and/or studies.