

TC DOCUMENT

I. BASIC INFORMATION FOR TC

▪ Country/Region:	Belize/CID
▪ TC Name:	Project preparation studies for George Price Highway Rehabilitation
▪ TC Number:	BL-T1063
▪ Associated Loan/Guarantee Name:	BL-L1019
▪ Associated Loan/Guarantee Number:	BL-L1019
▪ Team Leader/Members:	Raúl Rodríguez, Team Leader (INE/TSP); Leopoldo Montanez, Isabel Granada, María Romero (INE/TSP); Brian Mc Nish (TSP/CPN); Hisakhana Corbin (VPS/ESG); Venetia Eck-Salazar (CID/CBL); Cassandra Rogers (RND/CBA); and Andrés Consuegra (LEG/SGO)
▪ Date of TC abstract authorization:	October 30 th 2013
▪ Beneficiary (countries or entities which are the recipient of the technical assistance):	Government of Belize: Ministry of Works and Transport
▪ Executing Agency and contact name:	Ministry of Works and Transport
▪ Donors providing funding:	Infrafund
▪ IDB Funding Requested:	US\$540,000
▪ Local counterpart funding, if any:	US\$135,000 (in kind)
▪ Disbursement period (which includes Execution period):	12 disbursement, 9 months execution
▪ Required start date:	December 1 st , 2013
▪ Types of consultants (firm or individual consultants):	Firms
▪ Prepared by Unit:	Transport Division (INE/TSP)
▪ Unit of Disbursement Responsibility:	Belize (CBL)
▪ TC Included in Country Strategy (y/n):	Yes
▪ TC included in CPD (y/n):	No
▪ GCI-9 Sector Priority:	1) Lending to a small and vulnerable country 2) Lending to support climate change initiatives 3) Lending to support regional cooperation and integration

II. DESCRIPTION OF THE ASSOCIATED LOAN/GUARANTEE

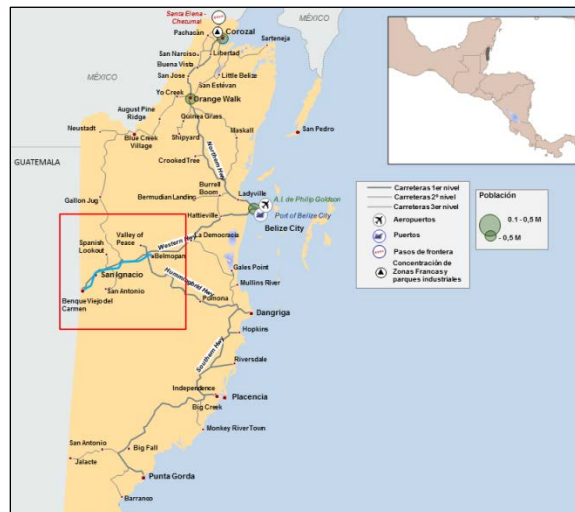
- 2.1 The Government of Belize (GoBL) requested support to the Bank to finance the rehabilitation of the Western corridor (see Map 1), that connects the city of Belmopan with the border crossing with Guatemala at Benque Viejo. This corridor, known as George Price Highway (GPH), has a major importance for the agricultural, agro-industrial, tourism and social development of Belize, including fostering regional trade between Belize and Central American countries¹. Particularly, the corridor will serve as the main platform to support the expected growth in trade between Guatemala and Belize, especially after the entry into force of the [Partial Scope Agreement](#)² in 2010. Historically Belize's exports to

¹ GPH is part of the Tourism Corridor prioritized connecting Guatemala (El Ceibo – Flores) with Belize (Belmopan), Mexico (Cancun) and El Salvador (Trujillo).

² The signed partial agreement promotes: the facilitation, promotion, diversification and expansion of trade in originating goods from the parties (Guatemala & Belize) by granting preferential margins on their tariffs, eliminating non-tariff barriers to trade, and establishing clear regulations on technical, sanitary and phyto-sanitary measures.

Guatemala have been partially recorded, however; from the available data, the cumulative value of trade over the years 2005-11 shows that Belizean exports to Guatemala were nearly US\$74 million while imports were US\$340 million³. Most recent data published by the Bank of Guatemala, predicts for 2013 a 9% growth in exports and a 20% growth in imports.

- 2.2 The GPH serves officially as the primary evacuation route of the country in case of natural hazard and natural disasters⁴. This is of extreme importance, as Belize lies in the subtropical geographic belt and has a climate governed strongly by seasonal variations in rainfall. Its long history of devastating weather related events have affected the country, on average, once every three years⁵, making evident the vulnerability of its infrastructure. Increased precipitations and extreme weather events associated with climate variability and climate change, give great urgency to the need to protect infrastructure assets that are indispensable for two of the country's biggest GDP contributors, agriculture and tourism, taking into account not only historical data but also future projections⁶.



Map 1 Location of the intervention

- 2.3 The rehabilitation of this corridor will imply to ensure better climate change resilience⁷ while enhancing road user safety in accordance to National Highway

³ Establishing improved infrastructure links with Guatemala, including roads and bridges, is therefore an important priority in order both to promote regional integration and to record more effectively current trade flows. Belize's Regional Integration Options. Victor Bulmer- Technical Note IDB TN-564.

⁴ The GPH is the designated national evacuation route in case of natural hazard and natural disaster. In the event of major natural events, citizens of Belize City and northern communities are requested to mandatory evacuate these areas and commute to San Ignacio and Santa Elena through the GPH.

⁵ Tropical depressions, tropical storms, or hurricanes have been recorded in 1931, 1955, 1961, 1971, 1974, 1978, 2000, 2001, and 2007, according to hurricane tracks available from the US National Weather Service.

⁶ Belize Second National Communication to the UNFCCC, 2011. Chapter 3 states "The assessment report of 1999 stated that approximately 60% of coastal areas were permanently inundated. With a projected 30 – 50 cm increase in mean sea level over the next 50 years, areas that are presently a few centimeters above sea level will convert to wetland and current wetlands will convert to shallow lagoons."

⁷ Extreme events and increased rainfall as well as flooding from sea level rise and intense rain will exacerbate the negative impacts on these corridors and contribute to their deterioration. Soil needs to be stabilized and better drainage systems will have to be developed in order to tackle these climate related effects. This should be part of a national adaptation program for the road network.

Standards. Moreover, it is envisioned that any improvement in Belize's intra and interregional connectivity will foster the growth of key economic sectors by reducing transportation costs, and increasing competitiveness through increased economies of scale.

- 2.4 The Bank has initiated the preparation of a loan operation (BL-L1019) to finance the rehabilitation of the aforementioned corridor and address the most important issues affecting its overall level of service⁸. The GPH was originally built in the 1930s and sections of the road were later rehabilitated in the mid-1980s between Roaring Creek Village at Mile 47.9 and Mile 79.4 at the Guatemalan Border at Benque Viejo del Carmen. Since its last rehabilitation in the 1980s, both routine and some periodic maintenance activities were undertaken within the limits of the financial resources allocated. Recently, deterioration of the running surface and portions of the road pavement have escalated and now progressed beyond the point where it cannot be addressed by routine maintenance alone.
- 2.5 Of particular concern is the Roaring Creek Bridge, which has been submerged at least twice in the last ten years and frequently has water straining its superstructure, possibly undermining its structural integrity. Loss of access to the bridge cuts off a critical evacuation route during severe storm events in the short-term and severely damages trade with Guatemala and tourism to important sites in Western Belize in the long-term.

III. OBJECTIVES AND JUSTIFICATION OF THE TC

- 3.1 The objective of this Technical Cooperation (TC) is to support Belize's efforts to improve the competitiveness of the country. This will be achieved through the rehabilitation of a key transport link between Belmopan and the cross border with Guatemala.
- 3.2 This TC is intended to support the development of updated technical and economic feasibility studies, as well as the needed environmental and social assessment for the rehabilitation of this road and the main bridge located close to Belmopan. Through this technical input, the Bank will be able to pin down the physical scope of the loan program and accurately determine: (i) the average cost per kilometer of the intervention; (ii) the works needed to mitigate the effects of heavy rains; (iii) identify and prioritize critical points along the corridor in terms of road safety that must be addressed; (iv) determine the scope of works for the Roaring Creek Bridge rehabilitation or replacement; (v) assess the environmental and social impacts of the project in accordance with the Bank's operational policies; (vi) draft a mitigation plan to ensure the protection of the environment and affected populations throughout the project life cycle; and (vii) develop a preliminary economic evaluation of the project. Depending on the preliminary results of this

⁸ According to the Highway Capacity Manual, the level of service of a road is a qualitative measure that describes traffic conditions in terms of speed, freedom to maneuver, comfort, convenience, traffic interruptions and safety.

technical assistance, the Bank will evaluate the need to apply for additional non-reimbursable resources⁹ to proceed with detailed engineering studies.

- 3.3 Both operations: the associated loan and this technical assistance, are aligned with the forthcoming country strategy 2013-2017 (that is expected to be considered by the Board on December 11, 2013) in which transport is a priority area to foster economic growth.
- 3.4 In accordance to the report (AB-2764) on the Ninth General Capital Increase of the IDB (GCI-9) this TC contributes to three goals: (i) “supporting development in small and vulnerable countries”; (ii) “supporting climate change initiatives” as the rehabilitation will reduce the impacts of natural disasters related with the climate; and (iii) “supporting regional cooperation and integration”. The project is aligned with Sector Strategy to Support Competitive Global and Regional Integration (GN-2565-4) as the GPH corridor is part of the *Red Internacional de Carreteras Mesoamericanas*¹⁰ ([RICAM](#)), that prioritizes the most relevant road links to foster the commercial dynamic in the region and with the rest of the world (regional additionality). The operation will support the infrastructure improvement of the principal ground connection with Central America through Guatemala, which will impact positively in the country competitiveness and connectivity.
- 3.5 Finally, this GoBL’s request is aligned with the Country Medium-Term Development Strategy (2010 – 2013), which highlights the importance of an efficient transport service for economic development.

IV. DESCRIPTION OF ACTIVITIES/COMPONENTS AND BUDGET

- 4.1 The TC will primarily support the preparation of feasibility studies for the rehabilitation of the GPH, conduct the economic analysis of the project and complete environmental and social assessment. A description of this operation’s components is presented above.
- 4.2 **Component 1. Technical feasibility studies.** This components includes the development of the following technical activities
 - Analysis of all existing information
 - Traffic and road safety studies
 - Preliminary geometric study and design
 - Pavement structure analysis
 - Critical structure identification (e.g. slopes to be stabilized or drainages to improve)
 - Road signaling and marking analysis
 - Assessment of the Roaring Creek Bridge condition and study of alternatives for its rehabilitation or replacement

⁹ A preliminary estimation of resources required to develop detailed engineering studies indicates a total of US\$700,000 in addition to the amount being requested. Engineering studies preparation would comprise the phase II of the preparation work required to move forward with the project.

¹⁰ The RICAM is part of the Mesoamerica Project.

- 4.3 **Component 2. Economic feasibility studies.** Economic feasibility of this intervention will be analyzed taking into consideration traditional benefits such as time savings and reduction in vehicle operation costs. The economic appraisal should use an incremental cost-benefit analysis technique whereby the annual costs in the base line network with no corridor improvement (the “do-minimum” scenario) are subtracted from the annual costs with the corridor improvement (the “do-something” scenario) to produce an annual net benefit stream. A standard discounted cash-flow technique must be used to compare all costs in present values. Economic performance will be measured as the Net Present Value (NPV), Economic Internal Rate of Return (EIRR) and First Year Rate of Return (FYRR). The appraisal period must cover 14 months of rehabilitation works followed by 20 years of scheme operation (2012 to 2031 inclusive). Traffic growth forecasts must take into consideration potential growth in the trade relationship with Guatemala, the expected economic growth of the Cayo District (about 3%) and the tourism targets of growth of 4.9% per year until 2030¹¹. At least three scenarios of economic analysis must be developed, using a conservative baseline scenario with historical traffic growth rates and alternative scenarios that project traffic trends that taking into account some of the factors above. The values used for the discount rate and project life will be 12% in line with the previous IDB guidelines.
- 4.4 The economic evaluation must also apply advanced econometric techniques and shadow prices if required to appraise benefits related to the increase of corridor availability, resilience and reduction of road accidents.
- 4.5 **Component 3. Social and environmental studies.** This component will fund the consultation process with relevant stakeholders, field activities and preparation of the Environmental and Social Impact Assessment (ESIA) for the rehabilitation. The consultation process will inform and engage the general public and stakeholders from the initial phase of the study on the intention to implement the project and further, to understand the expectations and concerns of the population regarding the scope of the project before the studies are complete. The ESIA will satisfy the requirements of Belize environmental Regulations, as well as the IDB Policies OP 102, OP 703, OP 704, OP 710, and OP 765. The preparatory activities for the ESIA and Environmental and Social Management Plan would include the identification and mitigation of direct and indirect impacts associated with the execution of the works and when the road comes into use, taking into account compliance with local regulations and the provisions of the Bank’s Safeguard Policies.
- 4.6 **Component 4. Project supervision.** The technical assistance will finance the hiring of specialized staff to support the Project Execution Unit (PEU) during the preparation and execution of the studies.

¹¹ National Sustainable Tourism Masterplan.

Table 1. Indicative results matrix

Activities	Expected outputs	Expected outcomes
Component 1		
Engineering feasibility studies	Preliminary engineering designs and plans, technical specification, time table and costing of the solution	Availability of economic inputs to prepare the operation
Component 2		
Economic feasibility Studies	Economic modeling for different rehabilitation scenarios	Availability of economic inputs to prepare the operation
Component 3		
Stakeholder consultations	Stakeholder input and concerns harnessed through public consultations on the Project and recorded. A matrix compiles of stakeholder input/concerns and explanations provided where it has not been incorporated into Project design.	Stakeholder's project appropriation
Strategic social and environmental assessment	Identification of the significant environmental effects which are likely to result from the implementation of the Project alternatives.	Social and environmental impacts are fully addressed
ESIA and ESMP	An ESIA is prepared for all project s alternatives and an ESMP for the recommended project alternative.	Identified mitigation measures are incorporated into the project ESMP and project budget.

4.7 Budget. The total estimated cost of the technical cooperation is US\$675,000 of which up to the amount of US\$540,000 will be financed by the Infrastructure Project Preparation Fund (INFRAFUND) on a non-reimbursable basis and US\$135,000 by the Beneficiary by means of an in-kind contribution. A breakdown of the indicative budget is shown below.

Table 2. Indicative budget

Activity/Component	IDB funding	Counterpart funding	Total funding
Technical feasibility studies	300,000		300,000
Economic feasibility studies	50,000		50,000
Social and environmental assessments	150,000		150,000
Supervision	40,000	135,000	175,000
Total	540,000	135,000	675,000

V. EXECUTING AGENCY AND EXECUTION STRUCTURE

5.1 The beneficiary agency for this technical cooperation will be the Ministry of Works and Transport. An already created technical unit in charge of the management of multilateral resources will be the executing agency, and thus will be responsible for contracting and monitoring the implementation technically and administratively¹².

¹² Prior to the approval of this technical assistance the Bank will support the Government in the selection and appointment of a project manager under the PEU. The Bank through its project team will provide fiduciary support to the PEU in the form of procurement and financial training following the Bank's policies.

The Bank's project team will also be responsible for the management of financial risks and will be in charge of filing all documents related to transactions made. The process of selecting consultants and firms financed with Bank's resources will be implemented in accordance to the Bank's Policy for the Selection and Hiring of Consultants (Document GN-2350-9 of March 2011).

VI. MAJOR ISSUES

- 6.1 There are no foreseeable issues or impacts to the preparation of the execution of this TC.

VII. EXCEPTIONS TO BANK POLICY

- 7.1 No exceptions to Bank policy were identified.

VIII. ENVIRONMENTAL AND SOCIAL STRATEGY

- 8.1 In accordance with the guidelines of the Policy Environment and Safeguards Compliance Policy (OP -703) and considering this TC is an operational input to the loan BL-L1019, it has been classified as category "B" by the project team. It is estimated that this TC will not generate significant negative environmental and/or social impacts.
- 8.2 Feasibility studies and assessments will identify the potential positive and negative impacts associated with the execution of the specific works to be financed, which in turn, will allow for timely and appropriate formulation of mitigation strategies. Special emphasis will be given to the social impacts and the possibility of improving the conditions of local communities. This value added approach will aim to enhance the social benefits of the program by analyzing the characteristics of the immediate neighboring areas, and include, wherever feasible, additional improvements to the drainage conditions of the roads with the purpose of reducing the likelihood of flooding and closure of the corridor.

Safeguard Policy Filter Report and Safeguard Screening Form are saved under IDBDocs No. 38138907.

Annexes:

Annex I. Mission Aide Memoire (draft version)

Annex II. Terms of Reference

Annex III. Procurement Plan

CONFIDENTIAL

TERMS OF REFERENCE
CONSULTANCY SERVICES FOR FEASIBILITY STUDY
AND PREPARATION OF PRELIMINARY DESIGNS
FOR MILES 47.9 – 79.4, GEORGE PRICE HIGHWAY, BELIZE

1. INTRODUCTION

The Government of Belize (GOB) has requested a Technical Assistance (TA) Grant from the Inter-American Development Bank (IDB) to assist in financing the services of a consulting firm to prepare a feasibility and economic study for rehabilitating the George Price Highway between the Hummingbird Highway Junction at mile 47.9 to the Guatemalan border at Benque Viejo at mile 79.4. The Environmental and Social Impact Assessments (ESIA) will be developed by a separate consultant. The Ministry of Works and Transport (MOWT) shall be the Executing Agency for the Project.

The George Price Highway (GPH) is one of four main highways in Belize and links the Southern, Northern and Belize districts, including the Capital City of Belmopan, with the Western part of the country. It is of major importance for the agricultural, industrial, tourism and social development of Belize, including promoting/fostering inter regional trade between Belize, Mexico and Guatemala.

The GPH was originally built in the 1930s and sections of the road were later rehabilitated in the mid-1980s between Roaring Creek Village at Mile 47.9 and mile 79.4 at the Guatemalan Border at Benque Viejo del Carmen. It was renamed the George Price Highway in 2012, after the late former Prime Minister, who led the Country to independence in 1981.

Since its most recent rehabilitation in the 1980s, both routine and some periodic maintenance activities were undertaken within the limits of the financial resources allocated. Recently, deterioration of the running surface and portions of the road pavement have escalated and now progressed beyond the point where it can be addressed by routine maintenance alone.

The situation was further compounded by the exponential increase in traffic levels emanating from the increase in trade and commerce activities, the increased movement of goods and services and expansion in the Tourism and Agricultural sectors. There is need to design a road to accommodate the current and future traffic levels for the projected usage over the next 20 - 30 years and replace and enhance the existing drainage infrastructure to make the road less vulnerable to the effects of flooding, particularly near the intersection of Hummingbird and George Price Highways at mile 47.9, Georgeville, Central Farm and between Succotz and the entrance to Benque Viejo Town.

Of particular concern is the Roaring Creek Bridge, which has been submerged at least twice in the last ten years and frequently has water straining its superstructure, possibly undermining its structural integrity. Loss of access to the bridge cuts off a critical

evacuation route during severe storm events in the short-term and severely damages trade with Guatemala and tourism to important sites in Western Belize in the long-term.

The GPH's original designs were not to current highway design standards requiring improvement of both the vertical and horizontal alignments to satisfy the AASHTO and, more importantly, address and substantially improve road user safety throughout the Project corridor.

Road safety on the four main highways, particularly the George Price Highway which has the highest traffic levels/usage, is now of high importance to the Government of Belize because of the number of road traffic accidents (RTA); the highest in Central America and the Caribbean and is compounded given that the section of road passes through the center of nearly ten villages.

Over the years, the rate of deterioration has taken its toll resulting in the section of road between Miles 47.9 and 79.4 necessitating urgent rehabilitation.

2. OBJECTIVE

The objective of the Consultancy is to undertake the necessary studies and investigations to rehabilitate the George Price Highway between Belmopan and the Guatemalan Border at Benque Viejo del Carmen focusing on improving the road's geometric alignment, incorporate road safety improvement countermeasures as identified in a recent International Road Assessment Program (iRAP) survey and carry out a hydrological study to address flooding and by extension build more resilience to climate change impacts. The Project is broken into two distinct components, the rehabilitation of the GPH between miles 47.9 and 79.4 and the rehabilitation of the Roaring Creek Bridge. Final prioritization of project alternatives will include options for each of the project components.

The consultant is to propose various project alternatives that rehabilitate the GPH between the Hummingbird Highway Junction at Belmopan (Mile 47.9) and the Guatemalan border at Benque Viejo del Carmen (Mile 79.4) to AASHTO standards. The highway is divided into three sections: (a) Section 1: Belmopan (mile 47.9) to Junction of GPH and Iguana Creek Road at mile 56; (b) Section 2: Junction of GPH and Iguana Creek Road to Red Creek Bridge in Santa Elena Town (mile 65) (c) Section 3: Junction of GPH and Buena Vista Street, San Ignacio Town (mile 67) to the Guatemalan Border at Benque Viejo del Carmen at mile 79.4. The Caribbean Development Bank is constructing a bypass around the twin towns of San Ignacio and Santa Elena. As a result the GPH between mile 65 and 67 is exempted from the project. The road is to be a two-lane highway rehabilitated to AASHTO standards. Substantial changes to the roadway are expected to include but are not exclusive to:

- Vertical and horizontal realignments,
- Improvements to the drainage system to provide resilience to climate change effects,
- Pavement reconstruction,

- Roadway widening to meet AASHTO design standards,
- The addition of two roundabouts at the intersection of the GPH and Iguana Creek Road at mile 56 and at the entrance to Benque Viejo del Carmen, and
- Improvement of road safety through pedestrian and bicycle facilities in urban areas, improved road lighting through the villages and adequate signing and marking of the roadway, and
- Rerouting the roadway in extreme circumstances.

The consultant is to propose project alternatives for the Roaring Creek Bridge. The bridge is occasionally submerged by flood waters. The consultant needs to determine whether the bridge should be rehabilitated and fitted with a raised road deck, replaced, or relocated giving the scope of work and estimated cost for each feasible alternative.

The consultant is to collect and analyze all information relevant to the preliminary examination of technical and economic aspects of the project alternatives. This shall be carried out in adequate detail for each project option to allow for: identification of design and/or 'constructability' constraints; conceptual designs; and estimated costs inclusive of the expected cost of mitigating environmental and social issues such as property acquisitions. On the basis of this examination, the consultant is expected to refine the project options to develop the project alternatives acceptable to the Client and Bank. The cost of mitigating environmental and social issues will be provided by the ESIA consultant.

The consultant is to collect and analyses all information relevant to the detailed examination of the technical and economic aspects of the project alternatives. The consultant will submit an Alternatives and Preliminary Design Report, and a Feasibility Study Report on the project alternatives, with a clear definition of the best alignment, and the optimum length of the road to meet AASHTO standards.

The aforementioned reports shall be used by the client to seek funding for the project. The consultant is expected to modify and/or enhance these reports as may be requested by the Client in response to the request of potential funding agencies.

3. DESCRIPTION OF SCOPE OF SERVICES

The Services shall be carried out in accordance with generally accepted standards of professional practice, following recognized engineering and management principles and practices. The consultants' scope of work is understood to cover all activities necessary to accomplish the stated objectives of these services, while adhering to the aforementioned principles and practices, whether or not a specific activity is cited in these Terms of Reference (TOR). The following represents a sampling of the specific activities required to satisfy the Objectives of this Consultancy. This is not an exhaustive list and the absence of any 'activities' necessary for the Consultant to satisfy the Objectives, does not preclude the Consultant's obligation to satisfy the Objectives.

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

A. TRAFFIC ANALYSIS

The MOWT has traffic counts and studies throughout the Project corridor completed within the last five years. The consultant will consult with the MOWT to determine whether any of the existing counts and studies may fulfill any of the necessary data for completing a Traffic Analysis.

Current Traffic

The consultant will determine present traffic volumes by means of traffic counts in at least six locations for seven consecutive days; with at least one 24 hour count on a weekday and one during a weekend. The composition of the traffic must be separated in terms of cars, buses, light goods vehicles, trucks, non-motorized vehicles etc. Special emphasis must be placed on identifying the movement of pedestrians and bicycles, and particularly vulnerable groups like school children in and around communities. It is necessary to categorize traffic as: normal, diverted and generated traffic.

The consultant will determine traffic loading and any overloading by estimating the number of 8.2 ton equivalent single axles using the roadway.

Origin and destination surveys will be carried out in the Benque Viejo and Succotz, San Ignacio and Santa Elena, and Roaring Creek areas to establish direction of traffic flows. This information is to be used to propose appropriate solutions through those villages for the main road and access roads.

Future Traffic

The Consultant will make traffic and traffic loading forecasts over periods of 5, 10, 15 and 20 years from the year in which any road improvements are scheduled to be placed in service. The forecasted traffic and traffic loading will be categorized as normal, diverted and generated traffic.

It is important that estimates of traffic and traffic loading take full account of both variations in traffic flows on different sections of the roads and fluctuations in traffic levels during the year.

Vehicle Operating Costs

The Consultant will collect and/or assess current operating and price data for each vehicle type using the roadway, which will be input into the economic analysis.

B. FUNCTIONAL / STRUCTURAL EVALUATION OF ROADWAY

The Consultant will evaluate and where necessary revise and update the following information on the road network level, including:

- Dates of construction, reconstruction or resurfacing.
- Design of the original pavement and reconstruction works, including drainage, pavement materials and mixes used.
- Volumes and composition of heavy traffic.

- Road accident data and analysis of ‘black spots’ with high traffic / pedestrian accident occurrence.
- Types of periodic maintenance carried out.
- Road Roughness Measurement
- Deflection measurements (Benkelman Beam-BB or Falling Weight Deflectometer-FWD).
- Geological, soil-materials, topographical, climatic, hydrological and drainage, and environmental characteristics and sensitivity.
- Local sources of materials and materials disposal areas.
- Soil profiles.
- Unit costs of rehabilitation and resurfacing of roadways and shoulders, etc.

Evaluation of the Existing Road and Bridges

The Consultant will need to establish the criteria and methodology necessary to evaluate road and bridge conditions along the project roads in terms of type, functionality, geometric configuration, and deficiencies related to safety and performance etc. A complete assessment on the Roaring Creek Bridge should be performed.

At a minimum, this evaluation should include: road roughness measurements, deflection testing of the pavement, test pits along the roadway and an analysis of the structural integrity of existing bridges and culverts.

Road roughness measurement

Road surface roughness should be measured using a vehicle-mounted road roughness meter.

Deflection analysis

The Consultant will need to carry out a deflection analysis of the existing pavement to calculate the present subgrade and pavement elastic modulus. The results must be calibrated with sufficient test pits reaching down to the subgrade, which amongst other things must establish pavement stratification and material types, and the position of the water table.

Drainage system assessment

Given the current existing problems with flooding, and the tendency of it to increase, a complete drainage assessment will be carry out to determine the scope of drainage system rehabilitation needed to meet the highway’s national standards.

Road Safety assessment

The Consultant will assess the safety condition of the road, including marking and signaling, pedestrian and bicycling facilities, identifying the needed action to be taken to meet the national standards.

Surveys

The MOWT is completing topographic surveys and preliminary designs for the entire road corridor at 20m intervals covering the extents of the right-of-way (ROW).

The consultant is required to complete topographic surveys only for new alignments. The survey will pick up all physical features and buried utilities. Where necessary, Cadastral Surveys would be done to identify extents of existing or proposed ROW.

A Cadastral Survey will be done for the existing or proposed ROW for new alignments to identify any segments of the ROW that require acquisition of lands or easements, removal of structures or resettlement.

Original ground levels and detailed cross sections shall be picked up at a minimum of 20m intervals and at intermediate points where necessary. The cross sections shall be taken over the full existing or proposed ROW width and include measurements of the location and elevation of all necessary points of embankment and excavation slopes, road pavement and shoulders, junctions, roadside drainage, drainage structures, bridges, crossings, retaining walls, river training structures, safety features, road signs, utilities, trees, boundary fences and entrances to roadside properties, watercourses and any other feature that would affect the design of road rehabilitation or new construction.

The Consultant shall prepare Computer Aided Design and Drawing (CADD) drawings and a digital terrain model of the completed ground survey of new alignments compatible with the MOWT's CADD drawings, which MOWT will provide to the consultant upon request. The survey data shall be recorded on plan-profile plans at a scale of 1:500 horizontally and 1:200 vertically. Road and waterway cross sections shall be drawn up at a scale of 1:200 or other scale that will allow for the precise description of the road elements.

The location, alignment, profile and cross section of all irrigation and other waterways lying within existing or proposed ROW for new alignments shall also be surveyed and recorded.

Identification and prioritization of critical interventions.

There are many areas where the GPH doesn't meet current standards, nor has trouble spots. Based on the roadway evaluation the Consultancy will identify those critical point to be addressed and will prioritize its rehabilitation in order to maximize the road's level-of-service. Here are the worst, but not all locations. Flooding frequently affects the roaring creek bridge and surrounding area at mile 48, Camalote Village at mile 50, Teakettle Village at mile 53, at mile 58, at mile 62, in San Ignacio at mile 67, at Succotz Village at mile 71, and at the entrance to Benque Viejo at mile 73. Poor road alignment has created accident hot spots at miles 49, 52, 53, 55, 56, 57, 58, 59, and 60. There are landslide concerns at the Z-curve at mile 53.

C. PROJECT ALTERNATIVES

The alternative analysis should take into account physical and environmental restrictions, public consultations, road safety specifications, critical spots prioritization, Roaring Creek Rehabilitation/Replacement alternatives. This should be done with the aid of

topography information and detailed studies and sampling should be done on the selected alternative. The selection is not a separate phase and should involve the stakeholder analysis.

D. CONCEPTUAL AND PRELIMINARY DESIGN

The consultant will prepare conceptual works designs for all alternatives. These designs should adhere to AASHTO geometric standards as well as national standards.

The consultant will prepare preliminary engineering designs for the road, bridges and culverts, drainage and road safety elements required for the best alignment and the optimum length of the road to be widened. The preliminary designs will take into consideration the following parameters;

- geometric design;
- traffic and safety designs;
- pavement design;
- drainage design;
- geotechnical design;
- bridge and structures design;
- environmental and social works design;
- public and private accesses
- any other necessary designs.

Typical design drawings must be presented for each design options and a schedule should be presented showing the locations of each type of geometric section. For structure and safety elements, typical designs and locations of these fixtures should be indicated on drawings.C.

ECONOMIC ANALYSIS

In order to achieve the objectives of the feasibility study aspect of the assignment, specific activities to be completed include, but are not limited to, the following:

Economic Analysis

The Consultant will assess and verify the types of vehicles using the roads and prepare an assessment of their characteristics appropriate for the economic analysis. Current operating and price data will be collected for each vehicle type and will be input into the analyses.

The cost inputs for the works would include investment, social and environmental mitigation and road maintenance cost. These costs would be those estimated for alternatives.

The Consultant will conduct an economic feasibility evaluation of the project alternatives. The evaluation will be conducted in terms of economic costs which will be derived from the financial prices considered. Road user costs with and without the project

should be estimated with the use of HDM-4. The respective costs and benefits of proceeding with these alternatives will be compared with a continuation of the existing situation. The most viable alternative would also be analyzed in parts to allow for phasing of the works; where each part should meet the minimum economic requirements. The computation for each alternative will be subjected to a sensitivity analysis with singular and combined variables.

In cases where the analysis of the project in its entirety does not meet the minimum economic requirements then the feasible part or section of the project should be identified and analyzed.

Economic Feasibility Report

The Consultant will propose an outline and content for this report. The report, which will be in '.doc' format for text and '.xls' format for spreadsheets and '.dwg' format for drawings, will draw together the various data collected and analyses conducted, and will present the consultant's findings in a clear and understandable manner.

4. CONSULTANCY SPECIFICATIONS

Type of Consultancy

The consultancy will require the services of a consulting firm with extensive experience in road and transportation engineering, and carrying out road feasibility studies, and designs. It is essential that the consulting firm demonstrate experience working on such studies in developing countries, particularly in the Caribbean and Latin American region.

Financing

The cost of the consultancy will include the consultant's remuneration as well as the costs of all incidentals associated with the conduct of the consultancy. The incidentals include, but are not limited to: traffic, axle load, geotechnical, engineering and cadastral surveys, field tests, trips, travel allowances, international calls, local transportation, secretarial expenses, copying and office supplies.

Duration

The duration of the study shall be 26 weeks.

Location

The study shall be carried out in Belize.

Reporting Schedule

The Consultant will submit five copies of reports, four copies to GOB and one copy to IDB. An electronic form of the reports will also be submitted.

The outputs / deliverables of the study shall be presented as follows:

- The Inception Report shall be submitted to the MOWT five weeks after the commencement date of the contract. It shall include: initial findings including any comments on the TOR; Consultants' detailed work schedule and

methodology; a proposed outline for the final report; and design criteria to be employed.

- The Traffic Analysis Report shall be presented within 9 weeks after contract signing;
- The Geotechnical Report to be presented within 12 weeks after contract signing;
- The draft Final Feasibility Report and Preliminary design shall be presented to the Chief Engineer, MOWT no later than 19 weeks after the signing of the contract. The MOWT will complete review of report within 20 days after receipt and submit its comments to the consulting firm for incorporation in the final report.
- The Final Feasibility Report and Preliminary design shall be presented no later than 26 weeks after the signing of the contract. An electronic copy of the feasibility report shall be provided in both Word and PDF formats to the Chief Engineer, MOWT whilst the reviewed preliminary design drawings shall be submitted in .DWG format.

Payments

The payments will be done according to the following schedule:

- 10% as an Advance Payment against the relevant guarantee
- 10% upon submission of the Inception Report
- 20% upon submission of the draft Alternatives and Preliminary Design Report
- 20% upon submission of the draft Economic Feasibility Study Report
- 40% upon submission and approval of the Final Report

Manpower Scheduling and Costs

In estimating man-month requirements and cost of the services, the consulting firm shall ensure that the proposal takes full account of all the above requirements and the following items:

Proposed Personnel for Consulting Firm

The key experts required for the Consultant's team, and their minimum qualifications and experience are:

- **Project Manager (Team Leader) – 6 months**
 - Education: MSc. in Civil Engineering
 - Experience: 10 years experience in road design and road construction with 5 years experience in developing countries and must include being 'Team Leader' in at least 2 projects of a similar nature in developing countries.
- **Structural Engineer – 2 months**
 - Education: MSc. in Structural Engineering

- Experience: 10 years experience in bridge design with 5 years experience in developing countries.
- **Hydraulics Engineer/Hydrologist – 2 months**
 - Education: MSc. in Hydrology or Hydraulics Engineering
 - Experience: 10 years experience in road design and road construction with 5 years experience in developing countries.
- **Geotechnical Engineer – 2 months**
 - Education: MSc. in Geotechnical Engineering
 - Experience: 10 years experience in road design and road construction with 5 years experience in developing countries.
- **Road Design Engineer – 3 months**
 - Education: MSc. in Civil Engineering
 - Experience: 10 years experience in road and pavement design and road construction with 5 years experience in developing countries.
- **Transport Economist – 1 month**
 - Education: MSc. in Economics or Transport Economics
 - Experience: 10 years experience in economic and financial appraisal of highway projects with 5 years experience in developing countries.

It is envisaged that inputs would be required from the following other experts:

- **Pavement Engineer**

The language of all reports will be English and all experts shall have a good command of English.

The Consultant must specify the qualifications and experience of each expert to be assigned to the assignment. For each key expert proposed, curriculum vitae of about 4 pages should be provided detailing the relevant experience and qualifications. Members of the consultancy team must have working experience in developing countries. Each key expert will provide a letter of commitment, confirming their availability for the study.

All team members must be present in Belize when conducting their assignments.

Coordination and Facilities

The MOWT is the executing agency for the Consultancy. The Consultant shall report to the Project Execution Unit Coordinator located within the MOWT. The IDB Project Team will have a supervisory role entailing evaluation and monitoring of the study and reviewing and approving the study in consultation with the Chief Engineer, MOWT

The MOWT will facilitate the issuing of any permits required for the Consultant to carry out their duties and make available all relevant reports, documents, maps and data.

The MOWT shall designate personnel to be mentored in all or specific aspects of the Study.

5. COMMENTS BY THE CONSULTANTS

The consultants are requested to make comments on and suggestions for, improvements to these TORs. The financial implications, if any, of these recommendations should be indicated separately in the Financial Proposal.

DRAFT

TERMS OF REFERENCE
CONSULTANCY SERVICES FOR ENVIRONMENTAL
AND SOCIAL IMPACT ASSESSMENTS
FOR MILES 47.9 – 79.4, GEORGE PRICE HIGHWAY, BELIZE

1. INTRODUCTION

The Government of Belize (GOB) has requested a Technical Cooperation (TC) Grant from the Inter-American Development Bank (IDB) to assist in financing the services of a consulting firm to prepare Environmental and Social Impact Assessments (ESIA) to accompany a feasibility study for rehabilitating the George Price Highway between the Hummingbird Highway Junction at mile 47.9 to the Guatemalan border at Benque Viejo at mile 79.4. The MOWT shall be the Executing Agency for the Project.

The George Price Highway (GPH) is one of four main highways in Belize and links the Southern, Northern and Belize districts, including the Capital City of Belmopan, with the Western part of the country. It is of major importance for the agricultural, industrial, tourism and social development of Belize, including promoting/fostering inter regional trade between Belize, Mexico and Guatemala.

The GPH was originally built in the 1930s and sections of the road were later rehabilitated in the mid-1980s between Roaring Creek Village at Mile 47.9 and mile 79.4 at the Guatemalan Border at Benque Viejo del Carmen. It was renamed the George Price Highway in 2012, after the late former Prime Minister, who led the Country to independence in 1981.

Since its most recent rehabilitation in the 1980s, both routine and some periodic maintenance activities were undertaken within the limits of the financial resources allocated. Recently, deterioration of the running surface and portions of the road pavement have escalated and now progressed beyond the point where it can be addressed by routine maintenance alone.

The situation was further compounded by the exponential increase in traffic levels emanating from the increase in trade and commerce activities, the increased movement of goods and services and expansion in the Tourism, oil and Agricultural sectors. There is need to design a road to accommodate the current and future traffic levels for the projected usage over the next 20 - 30 years and replace and enhance the existing drainage infrastructure to make the road less vulnerable to the effects of flooding, particularly near the intersection of Hummingbird and George Price Highways at mile 47.9, Georgeville, Central Farm and between Succotz and the entrance to Benque Viejo Town.

The GPH's original designs were not to current highway design standards requiring improvement of both the vertical and horizontal alignments to satisfy the Ministry of Works and Transports' (MOWT) minimum highway standards and, more importantly, address and substantially improve road user safety throughout the Project corridor.

Road safety on the four main highways, particularly the George Price Highway which has the highest traffic levels/usage, is now of high importance to the Government of Belize because of the number of road traffic accidents (RTA); the highest in Central America and the Caribbean and is compounded given that the section of road passes through the center of nearly ten villages.

Over the years, the rate of deterioration has taken its toll resulting in the section of road between Miles 47.9 and 79.4 necessitating urgent rehabilitation.

2. OBJECTIVE

The objective of the Consultancy is to undertake the necessary environmental and social impact studies and investigations to permit the rehabilitation of the George Price Highway between Belmopan and Benque Border with minimum effect on local communities and the surrounding environment and cultural sites. The ESIA is to directly support the feasibility and economic studies being performed by a separate consultant.

The consultant is to collect and analyze all information relevant to the preliminary examination of environmental and social aspects of the project alternatives, including public consultations. This shall be carried out in adequate detail for each project option to allow for expected cost of mitigating environmental and social issues such as property acquisitions. The consultant shall provide the necessary information to the consultant producing the feasibility and economic studies to prioritize project alternatives and provide cost estimates of any required mitigation.

The consultant is to collect and analyze all information relevant to the detailed examination of the technical, economic, environmental and social aspects of the project alternatives. The consultant will submit an ESIA Report on the project alternatives, with a clear definition of the best alignment, and the optimum length of the road to be rehabilitated for which preliminary designs would be carried out.

The aforementioned reports shall be used by the client to seek funding for the project. The consultant is expected to modify and/or enhance these reports as may be requested by the Client in response to the request of potential funding agencies.

3. DESCRIPTION OF SCOPE OF SERVICES

The Services shall be carried out in accordance with generally accepted standards of professional practice, following recognized engineering and management principles and practices. The consultants' scope of work is understood to cover all activities necessary to accomplish the stated objectives of these services, while adhering to the aforementioned principles and practices, whether or not a specific activity is cited in these Terms of Reference (TOR).

The Project is broken into two distinct components, the rehabilitation of the GPH between miles 47.9 and 79.4 and the rehabilitation of the Roaring Creek Bridge. Final prioritization of project alternatives will include options for each of the project components.

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

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

Principal Objectives

The Consultancy will conduct an Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) to satisfy the requirements of the Belize's Environmental Protection regulations well as the IDB Policies OP 102, OP 703, OP 704 and OP 710 for the Rehabilitation of the GPH. To achieve this objective, the Consultants will be required to review all the pertinent environmental and social aspects of the proposed project area. Upon completion of this review a report must be prepared and presented in accordance with the provisions and regulations of Belize's Department of the Environment and must capture the required information outlined in this TOR. Although this TOR is comprehensive it is by no means exhaustive and should be extended to capture all relevant information relating to this project. The Consultant will be allowed to include relevant information at their discretion and is responsible for all studies conducted under this Project.

A. ENVIRONMENTAL AND SOCIAL IMPACT EVALUATION

A1. Area of study

The area of study should include all areas that are likely to be impacted by the implementation of this Project. All areas where the Project intersects with human settlement, including residential, commercial, industrial, etc. should be carefully examined to determine the Project's impact. The environmental impacts must center on the area of direct environmental and social influence (ADI), defined as a band 4km east and 4km west of the center line of the current road throughout the length of the road, provided that this band can be extended to cover a functional unit and shall include:

- the existing areas of human concentration;
- the right of way;
- the areas required for material stockpile, traffic diversions, asphalt plants, etc.;
- the transportation routes between any quarries and dumps;
- relevant functional units even if only partially affected (e.g., protected areas, wetlands, agricultural plots, commercial establishments, etc.);

All remaining areas where the Project will have an indirect or lower intensity impact, comprises the areas of indirect environmental and social influence (AII). The Consultant will be expected to produce maps depicting the areas of direct and indirect influence throughout the length of the roads or their functional extension at an appropriate scale showing the following:

- The population centers, protected areas (if any), and principal services.
- Other representative physical, biotic, socio-economic and cultural features should also be included.

- A cadastral survey of the land units on or adjacent to the ROW identified on a map.

Whenever the road passes close to ecologically fragile and/or protected areas, such as archaeological areas and human settlements or culturally important sites, the scope of the assessment shall be widened to permit evaluation of the impacts of the works and use of the highway in those areas.

A2. Environmental and Social Baseline Assessment

The Consultant will be required to carry out an Environmental and Social Baseline Assessment (ESBA) prior to Project implementation. This assessment should aim to examine the significant short and long term effects of the proposed Project on the existing environment within the Project site. Further, the evaluation must include the processes of analyzing, monitoring and managing the intended and unintended environmental and social consequences, both positive and negative, of proposed Project and any environmental and social changes invoked by the implementation of the Project. The report to be submitted must meet the following requirements:

- i. Establish the baseline environmental and social conditions within the Project's area of direct and indirect influence. In achieving this objective a complete description of the existing conditions within the Project area must be examined. Further the Consultant will be required to review all available data/study on the biological, physical, socio-economic characteristics of the Project area as well as the area of indirect influence. Special emphasis should be placed on those aspects which have the potential of being affected by the implementation of this Project.
- ii. A detailed description of the physical environment should be produced and information relating to the geology, soils, land use (present and historical land use), hydrology, meteorological conditions and patterns, drainage and irrigation, water use, surface and ground water quality, air quality, environmental noise, etc. must be captured in the report.
- iii. Provide a detailed description of biological environment including information on the flora and fauna, any sensitive ecological habitats and endangered species existing within the Project area, aquatic environment including wetlands, etc. The study should also identify the existing waterways within the Project area and the environmental implications of the Project for these structures.
- iv. A description of the socio-economic environment including information relating to demographics, land use, education levels, health, income, means of transportation (motorized, non-motorized), social characteristics, traffic patterns, types of businesses that may be affected, identification of lots and necessary relocation due to construction, infrastructure services that may be affected including drainage and irrigation structures, utilities including telephones, electricity, etc.
- v. Inventory and evaluation of public and private infrastructure and buildings in the areas of direct influence during construction and operation, with a view to:

- (i) establish a base line to address any future damages or related claims; (ii) identify vulnerabilities and corresponding prevention, monitoring and mitigation measures; and (iii) design operating procedures and monitoring requirements
- vi. Identification of the archaeological, historical and tourist sites in proximity to the road and evaluation of the positive and negative impacts of improved access to these areas. If the road and its approach roads traverse or affect areas of archaeological interest, the Consultant shall contact Environmental Authorities and ascertain the legal status of the areas and the specifications and requirements of the institute for appropriate treatment of the cases. Areas of communal interest (churches, cemeteries, other sites of cultural or religious significance must also be considered.

A3. Environmental and Social Impact Assessment

The Environmental and Social Impact Assessment (ESIA) should examine the potential social and environmental impacts emanating from the implementation of the proposed Project. The primary aim should be to identify the magnitude and other dimensions of the predicted social and environmental change resulting from execution of the Project, using as the point of reference, the existing situation within the Project area. Impacts should be assessed based on the social, ecological and physical information collected during the Environmental and Social Baseline Assessment (ESBA) conducted by the Consultant. The Consultant will be expected to capture the following information:

- i. Provide a detailed description of the Project activities from conception through design, construction and operation in order to identify and evaluate the indirect, direct, and cumulative impacts during the execution of the works as well as during the operation phase of the roadway; including land use and community structure and activities.
- ii. Identification and evaluation of direct and indirect impacts during execution of the works and when the road comes into use taking into account compliance with local regulations and the provisions of OP-703 (particularly Directives B.9, B.10 and B.11) and OP-710.
- iii. A characterization of the potential impacts on the physical, biological, ecosystems and social components in the area of environmental influence traversed by the highway.
- iv. The evaluation of the impacts on the physical environment should assess the potential impacts during the construction phase and must cover issues such as direct land loss, erosion, soil compaction, potential impacts due to accidental spills and noise and vibration from construction activities, etc. should be examined.
- v. In addition, impacts of the Project implementation on the air quality should also be examined. Issues to be covered include impacts noise and dust from construction activity, dust from the transport and stockpile of materials and fumes emission from the operation of heavy duty machinery, etc.

- vi. The evaluation of the impacts on the biological environment should assess potential impacts on the surrounding water resources. The water ways crossed by the highway should be identified and the potential environmental impacts resulting from the Project's implementation including narrowing of their widths, erosion, blockage of streambeds, contamination etc. must also be examined.
- vii. Identification of runoff and infiltration issues, including mapping of nearby underground water resources and wells.
- viii. Identification and demarcation of fragile and/or protected ecosystems within the proposed Project area, where necessary and the impacts on these ecosystems including loss of habitat, etc. are to be considered.
- ix. Evaluation of the principal water uses and identification of potential impacts on water quality due to accidents or transportation of hazardous materials.
- x. The aesthetics of the environment can also be adversely affected during construction phase of the Project. Some issues to be examined includes change in aesthetics of the surrounding environment, improper disposal of solid waste and builder's waste generated from the Project and unsightly construction activities such as improper storage of stockpiled material.
- xi. An evaluation of the impacts on the archaeological, historical, cultural and tourist sites in proximity to the highway and evaluation of the positive and negative impacts of improved access to these areas.
- xii. The evaluation should examine the extent of social disruption during each phase of the Project from mobilization through operation phase and provide appropriate mitigation measures to reduce these impacts to acceptable levels. Impacts to be considered include socio-economic, health and safety including risk of accident to workers and the surrounding communities, introduction of diseases to the community, community culture and values, and potential implications on the residence. The general implications on the changes of land-use and social-community resources should also be examined.
- xiii. Where expropriation and/ relocation or restriction of use affecting households, businesses or other land users becomes necessary, the Consultant will be responsible for identifying precisely the number of persons affected, their legal rights to the property, their dependence on the land for subsistence and detailed socioeconomic characterization. If resettlement is necessary the Consultant shall prepare a resettlement and compensation plan in accordance with the IDB's guidelines for involuntary resettlements, (OP-710).
- xiv. The Consultant must quantify and assign priorities to the impacts and classify them according to their importance, magnitude and extent, the permanence of the impact (temporary, permanent), the sphere of influence (local, regional, etc.), 'mitigability', reversibility, probability of occurrence and other appropriate characteristics.

- xv. The Environmental Specialist will actively participate with the Project Engineering Team in the process of defining all details of Project design in order to ensure the best environmental and social solutions are provided. Joint effort is required in the preparation of, among other things:
- A map of the highway on an appropriate scale of the area of direct environmental influence (ADI), showing the locations of the existing human settlements, the areas required for encampments, water ways crossed by the highway, areas of landslides, traffic diversions, etc., and extending that area of influence to include ecologically fragile and/or protected areas, and archaeological, tourist, historical and other settled areas, on which impacts will be exerted during execution of the highway works and use of the roadway.
 - Recommendation of the environmental characterization of the areas proposed for implementation of the supporting infrastructure for the works (asphalt plants, encampments, disposal areas, fuel storage, and service roads, among others). This characterization shall cover, among others, the aspects of relief, plant cover, surface and ground drainage, the direction of the prevailing winds, accessibility, and proximity to protected archaeological areas.
 - On the basis of the resulting characterizations, definition of the recommended areas, performance of the preliminary studies for the plan for recovery and use of the selected areas and estimation of the corresponding costs for inclusion in the Project budget. Also, recommendation of the specific measures for the control of degradation in and environmental recovery of each of the selected areas, and framing of the rules of behavior for the workers for environmental safeguards and relations with settlements in the vicinity of the encampments.
 - The Consultant shall recommend locations for dumps, stockpile of materials and other necessary areas required for Project execution so that they do not become environmental issues such as erosion into surrounding water ways, dust nuisance, and areas where traffic patterns will be significantly modified or where the change in accessibility is likely to spur significant changes in land use patterns, etc. The aspects of potentially usable sites to be considered must include the possibility of conflicts with their owners or with environmental or NDC authorities. Finally, the recommended dump and storage sites must be such as can be reconstituted and replanted for integration into the landscape upon completion of the works.
 - The Environmental Specialist and the Project 's Engineer Team must also ensure safe crossing conditions, adequate road markings and street lighting wherever needed and incorporate these aspects into the road safety measures to be implemented.

- The Consultant must ensure that all environmental and social mitigations measures are included in the designs and resources are allocated accordingly.
- xvi. Identify the relevant laws, guidelines, regulations and standards that would define the operating framework of the Project. Legal aspects related to the Project including licensing requirements and procedures, land use permits and any other relevant norms should be included. All documentation required for licensing should accompany the study.

B. EVALUATION OF ENVIRONMENTAL LIABILITIES

The Environmental Liabilities usually generated by highways are the impacts on third parties from existence of the road and the impacts of third parties on it. Since in the latter case those third parties cannot always be identified and held accountable, these environmental liabilities have to be corrected only in cases of hazard to the road infrastructure and its users. Below are examples of impacts classed as environmental liabilities are:

- Landslides and slumps, cave-ins, and slope instability
- Erosion, silting, streambed obstruction, flooding resulting from changes in drainage and permeability
- Uncontrolled off-site dumping
- Water pollution
- Ecological and landscape damage in natural areas
- Areas degraded by quarrying and extraction of other materials for the works, the opening of service roads, encampments, etc.
- Accesses to and from local roads and streets of human settlements blocked by the highway
- Damage to sources of water of human settlements and/or of irrigation canals along the highway
- Interference with pedestrian or non-motorized traffic that creates safety hazards
- Hazards or nuisances affecting residential or commercial uses of the land adjacent to the RoW, including noise, dust, vibration.
- Occupation of the right-of-way.
- Damage buildings or infrastructure as a result of construction activities or traffic (vibration, impact, dust and soot, etc.)
- Safety and related injury issues.

The Environmental Liability of the road under study for construction will be confined to impacts that put at risk the route, its users, and the areas, ecosystems and communities near the right-of-ways, accesses and ancillary facilities, including transfer and detour areas during construction.

To identify the environmental (including any social aspects) liabilities the Consultant will have to carry out the following activities:

- i. Devise a methodology for the evaluation of environmental liabilities.
- ii. Design and submit for approval by the MPW&C the characterization sheet that will be used to enter the environmental liabilities.
- iii. Classify the environmental and social liabilities into categories.
- iv. Compile all information needed to fill out pre-established characterization sheets.
- v. Consult with stakeholders.
- vi. Fill out the characterization sheets for each individual situation (environmental and social liability) detected, which shall contain, at a minimum:
 - o Its location, approximate dimensions, obtained by quick reliable procedures.
 - o Its identification under the pre-established general classification.
 - o Its description, including its probable causes.
- vii. Mount in an annex photographs of the most important and unusual features of the environmental liabilities.
- viii. Enter on the baseline map as an additional layer, the environmental and social liabilities detected for the road and approach roads and ancillary facilities and transfer routes, showing the distance location in kilometers. The map shall contain, at a minimum, the urban areas near the main highway and the watercourses and secondary, important natural or historical features roads that cross or connect to the roads under evaluation.
- ix. Submit the characterization sheet to the MOWT for final approval.
- x. Classify the environmental land social liabilities as critical and non-critical in accordance with the definitions proposed by the consultant and accepted by the MOWT.
- xi. For the critical liabilities include, in addition to the information referred to above, a characterization of the works, services and/or corrective measures recommended, including schematic sketches of the solutions proposed, a determination of the quantities, costs and budget and the critical environmental liabilities to be eliminated or mitigated in the works. The solution of these liabilities must be included in the project's budget.
- xii. For the non-critical liabilities include a ranking of importance and options for attenuation measures, including identifying the need for monitoring.

C. PUBLIC CONSULTATIONS GUIDELINES

The Consultant must also implement a Stakeholder Consultation Process that fulfills the requirements of informing and engage the general Public from the opening phase of the study, of the intention of the MOWT to implement the Project and further to listen to the expectations and concerns of the population regarding the scope of the Project before the studies are done and its implementation begins.

Any consultation process initiated must fulfill at a minimum the following objectives:

- Facilitating the incorporation in the Project of the measures required for its technical, environmental and socio-cultural viability and capturing the view of the affected persons;
- As far as practical establish agreements with stakeholders or at minimum achieving an adequate degree of acceptance on the part of the affected groups;
- Incorporate the concerns/needs of the affected persons as well as beneficiaries into the Project's priorities;
- Devise a methodology to promote local ownership of the Project and facilitate cooperation during construction and operation for instance systems and tools for continuous engagement with stakeholders including the preparation of a Communication Plan and the appointment of a Community Liaison Officer, early identification of potential conflicts and strategies to avoid or overcome them;
- Providing for transparency in the management of the Project and the impacts and opportunities it brings to the affected stakeholders;
- Gathering local intelligence that can facilitate and improve Project design and implementation through interactive/participatory session with stakeholders;

The Public consultations process should be designed and executed with due account to the principles of sound consultation and stakeholder engagement including:

- Early consultations;
- Wide consultancy that captures the sphere of direct and indirect influences of the Project;
- Collect and maintain proper documentation of stakeholders concerns raised during consultations;
- Be knowledgeable about all the options being considered for the Project and their potential impacts;
- Allow stakeholders reasonable time for absorption of information, convening of stakeholders and provisions of feedback;
- Report on issues identified in a balanced and objective manner;

- Request feedback from stakeholders for instance with the provision of questionnaires at the end of consultation meetings, etc.; and
- Conduct consultation in mutual good faith and maintain a two way process at all times.

In achieving the above-mentioned objectives of the Public Consultations the following tasks must be met by the consultant;

i. Task 1: Scoping and Stakeholder identification and analysis

The Consultant will be expected to make reconnaissance site visits and based on information gathered should identify and prioritize stakeholders within the areas of direct and indirect influence, with special emphasis being placed on the vulnerable groups such as children and the elderly and any other disadvantage groups/subgroups whose needs are less likely to be taken into consideration under the usual planning scenarios.

Once the universe of stakeholders has been identified, analyze their relationship to the Project and relationships among the groups as relevant, to establish the relative priority of engaging with each group. Provide a mapping of the stakeholders that takes into account the following factors as they relate to the Project:

- Impacts, risks and opportunities generated;
- Stakeholders' characteristics, assets, capabilities and vulnerabilities; and
- Stakeholders' interests and influence.

Based on the results of the initial analysis of the various stakeholders group, the Consultant should outline how the respective consultations will be executed.

ii. Task 2: Consultation Plan

Prepare a Consultation Plan and communicate to stakeholders which should include at minimum:

- A non-technical summary of the proposed Project for the stakeholders to make informed decisions on whether, or the degree to which, they may be affected by the implementation of the Project;
- A scheduled timeframe for consultation that allow for stakeholders to absorb Project information, ask for clarifications and provide feedback. Consideration must be given to Public holidays, work schedules and local scheduling preferences with a view of maximizing stakeholders participation;
- The manner of consultation (seminars, presentations, interviews, open-houses, workshops, structured or unstructured surveys, workshops, etc.) that is

designed to elicit the interest and participation of the different types of stakeholders, should take into account:

- Inclusiveness that allows for the participation of individuals as well as their functional and organic organizations;
- Attention to verifying the legitimacy of any one acting in a representative capacity and to avoiding conflicts with existing representation systems;
- Particular attention to providing for inclusion for a typically marginalized groups (such as women, youth, the elderly, the disabled and ethnic minorities depending on the situation);
- Notifying stakeholders of consultation prior to their execution with emphasis being on reaching those expected to be affected;
- Opportunities for stakeholders to participate in more than one event so that they can internalize information and consult with their own counterparts before providing final feedback;
- Provision of all relevant Project information to the stakeholders;
- The scope of the inputs expected and of the ways in which stakeholder concerns will be included in the Project; and
- Conflict management strategies if opposing interests are identified.

The final Consultation Plan should also take in consideration the consultation requirements of local Agencies such as the Environmental Protection Agency.

iii. Task 3: Implement the Consultation Plan

Carry out the consultation according to the plan employing a variety of methodologies as needed to ensure proper coverage of the various stakeholder groups. Given the nature and location of the Project, particular attention should be given to concerns that below:

- Changes in connectivity or accessibility of neighborhoods, public services and community resources;
- Traffic and pedestrian safety and access;
- Exposure to noise, dust, fumes , risk of accidents and other nuisances or hazards;
- The acquisition of the ROW, private lands and other land use changes that could cause physical displacement of homes, commercial establishments or economic or community activities and uses including as street vending, recreational uses, use as public meeting places, transportation hubs, etc.;
- Changes in economic activities and livelihoods resulting from changes in traffic patterns and accessibility;

- Potential for in or out-migration as a result of job opportunities and/or changes in access to the Project site. Further issues related to labor, job opportunities for local population and Project labor force training, housing and code of conduct should also be examined;
- Increased risk of accidents or exposure to hazards from heavy traffic and hazardous loads;
- Community needs and opportunities related to the Project;
- Affection of infrastructure, crops or activities as a result of the construction or operation of the improved road and its ancillary works and changed patterns of use (including impacts of changes in drainage, vibration, noise, dust or light from construction or traffic, proximity of foot or vehicle traffic; and
- Any other issues, concerns, needs, demands or perceptions related to the Environmental and Social Assessment issues described in the scope of the assessment.

The methodology for carrying out the consultation needs to clearly identify the roles of the participants, the rules of engagement and the scope of the results that can be expected. Time should be allocated for brain storming to identify issues, concerns and expectations/demands and then proceed to analyze the causal relationships with respect to the Project and to identify potential solutions and alternatives for issues identified during such session.

iv. Task 4: Compile and analyze the results and provide them to the Technical Team

Once all groups of stakeholders have been consulted, the Consultant shall prepare a report that classifies their inputs and analyzes their relevance to the Project in terms of at minimum:

- Environmental impacts and risks;
- Social impacts and risks;
- Community support for the Project;
- Community objections or opposition to the Project;
- Opportunities to improve the fit between the project and the stakeholders' needs and demands; and
- Key points that require feedback to the stakeholders and stakeholder issues that might pose a risk to the successful implementation of the Project.

v. Task 5: Prepare and deliver presentation(s) to the stakeholders providing feedback on their inputs

The Project team including the Environmental Specialist and Project Engineering Team will be required to analyze the inputs and information

gathered during the consultations and to determine how to provide feedback to the stakeholders. This would include:

- Explain any misconceptions about the Project to allay unjustified concerns;
- Proposing feasible Project design change or improvement options that can address specific concerns;
- Explaining any Project limitations and any issues that are beyond the scope of influence of the Project or inevitable impacts that are not feasible to avoid or fully mitigate;
- Proposing mitigation or compensation measures that would be available to address potential environmental, social and economic risks or impacts and the process by which the Project will work with the affected stakeholders to assess the impacts and implement the measures;
- Describing the process the Project will implement for continued engagement with stakeholders whose concerns require implementation of management measures;
- Describing the communication plan to keep stakeholders informed in later stages of Project development as needed and proposing mechanisms for continued interaction (such as stakeholders' committees, hot lines, etc.);
- Informing stakeholder of how they can follow up on the Project if they wish to do so and how they can obtain and provide information with respect to the performance of the Project; and
- If the analysis identified potential conflicts, describing the process the Project will implement to receive and respond to stakeholder complaints (a grievance management mechanism).

This feedback process should be provided in a brief written report and disseminated through a series of targeted presentations to key stakeholder groups.

D. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

An environmental and social management plan shall be drafted (in accordance with IDB Safeguards OP-703-Directive B.5), which shall include the below.

An impact mitigation plan with descriptions of each mitigation measure proposed, the impact to which it relates, the conditions under which it will be required (in the design, before or during construction, permanently, for contingencies, etc.), and the design requirements and procedures for its execution. Each program must have a budget for its implementation.

A program for environmental and social follow-up or monitoring. Definition of the institutional responsibilities for implementation of each mitigation measure, including (i) implementation; (ii) operation, (iii) maintenance, (iv) control and supervision during construction and operation of the works, and (iv) environmental and social monitoring and reporting.

A program for resettlement and/or social compensation / expropriations (if necessary) in accordance with OP-710, including Social Baseline Information, community participation, compensation and rehabilitation package, legal institutional framework, environment, timelines, monitoring and evaluation and coordination.

An investment program, a timetable and estimated budget for all investments and recurrent costs in implementation of the environmental management plan.

A communications and grievance management program.

A timetable of the activities, which must be synchronized with the activities for construction of the main components of the project and/or its operation phase.

The expected components of the management plan include, among others:

- i. soil erosion control, slope stabilization, drainage management, and restoration of natural vegetation in temporary use areas;
- ii. environmental measures for the protection of surface and ground water courses and the preservation of their quality and quantity and of aquatic fauna;
- iii. control of atmospheric emissions (dust and gasses) and noise which affect the workers, neighboring inhabitants, crops or the general environment;
- iv. measures to manage and restore the areas impaired by the installation and operation of all ancillary facilities and transfer routes including asphalt plants, quarries, crushers, etc., to their natural condition;
- v. measures for the management of domestic and industrial solid wastes and for control of sewage discharges during construction;
- vi. special measures to attenuate the barrier effect of the works and to avoid disturbing the native flora and fauna;
- vii. appropriate quarrying procedures to avoid excessive degradation of the areas to be worked and, afterwards, leveling, earth-filling, replanting and other needed measures to restore the quarried areas to their natural condition;
- viii. appropriate procedures for using the areas slated as dumps for refuse and spoil from leveling and other wastes, with due regard for the site selection and design of the dumps, how materials are to be placed in them, and appropriate cover to ensure their stability.
- ix. measures to offset impacts that cannot be mitigated, such as compensation to owners of land, structures, businesses, crops and other installations to be affected by the widening of the road;
- x. measures for resettlement and compensation of any households, businesses or land users to be displaced by the road or having their access to resources, services or markets restricted directly or indirectly (if required) ;
- xi. measures to protect nearby natural areas and wild life from direct impacts of construction or impacts due to increased access and land use change impacts (if required);

- xii. measures to protect local population from the influx of large numbers of workers and to deal with potential problems such as alcohol and substance abuse, HIV-AIDS prevention, etc.
- xiii. identification of the costs and benefits of the mitigation and the environmental management plans in order to include them in the economic-environmental evaluation;
- xiv. measures to ensure compliance with local laws and the fundamental rights at work with respect to the contracting of labor for the project, and to implement assurance systems for worker health and safety;
- xv. measures to manage spills of fuels and oils, and their disposal during construction;
- xvi. measures to manage traffic, noise and accidents during construction.
- xvii. measures to control impacts during operation including speed reduction elements, signals, barriers, safety measures, and contingency plans in case of accidents and incidents involving hazardous materials, control noise, dust and vibration, maintain pedestrian access and connectivity, etc.

E. FINAL REPORT ON THE ENVIRONMENTAL AND SOCIAL IMPACT STUDY

The report to be presented must be analytical and concise, and emphasize the significant social and environmental problems, the measures and actions recommended, and the costs and responsibilities involved. In addition to the above-mentioned, it must also include the following:

- In addition the final ESIA/ESMP must include a monitoring plan to identify mitigation and monitoring cost for every phase of the project. The monitoring plan should cover auditing, reviewing, reporting including monitoring sheets to be used and corrective action to be taken for non-conformance to ensure compliance with the ESIA/ESMP.
- Emergency response plan should identify potential environmental and social issues emanating during the execution of the project. This plan must include emergency response policy, emergency response contact personnel along with their appropriate details, emergency procedures. A description of an emergency should be included in this section of the report. Where applicable response procedures to minor as well as major accidents/incidents should also be developed for fire, accident, traffic accidents and fuel spills. The consultant should also develop an incident report formatting.
- Closure plan where consideration should be given to principal closure and decommissioning issues that may arise. Recommendations for the predicted issues should also be identified.

4. CONSULTANCY SPECIFICATIONS

Type of Consultancy

The consultancy will require the services of a consulting firm with extensive experience in environmental and social impact assessments for road projects. It is essential that the consulting firm demonstrate experience working on such studies in developing countries, particularly in the Caribbean and Latin American region.

Financing

The cost of the consultancy will include the consultant's remuneration as well as the costs of all incidentals associated with the conduct of the consultancy. The incidentals include, but are not limited to: surveys, field tests, trips, travel allowances, international calls, local transportation, secretarial expenses, copying and office supplies. The cost of the consultancy will include the consultant's remuneration as well as the costs of all incidentals associated with the conduct of the consultancy. The incidentals include, but are not limited to: surveys, field tests, trips, travel allowances, international calls, local transportation, secretarial expenses, copying and office supplies.

Duration

The duration of the study shall be 26 weeks.

Location

The study shall be carried out in Belize.

Reporting Schedule

The Consultant will submit three copies of reports, two copies to GOB and one copy to IDB. An electronic form of the reports will also be submitted.

The outputs / deliverables of the study shall be presented as follows:

- The Inception Report shall be submitted to the MOWT five weeks after the commencement date of the contract. It shall include: initial findings including any comments on the TOR; Consultants' detailed work schedule and methodology; a proposed outline for the final report; and design criteria to be employed.
- The Environmental and Social Baseline Assessment shall be presented within 8 weeks after contract signing;
- The Environmental and Social Impact Assessment shall be presented within 12 weeks after contract signing;
- The Environmental and Social Management Plan to be presented within 16 weeks after contract signing;
- The draft Final Report on the Environmental and Social Impact Study shall be presented to the Chief Engineer, MOWT no later than 19 weeks after the signing of the contract. The MOWT will complete review of report within 20

days after receipt and submit its comments to the consulting firm for incorporation in the final report.

- The Final Report on the Environmental and Social Impact Study shall be presented no later than 26 weeks after the signing of the contract. An electronic copy of the feasibility report shall be provided in both Word and PDF formats to the Chief Engineer, MOWT whilst the reviewed preliminary design drawings shall be submitted in .DWG format.

Payments

The payments will be done according to the following schedule:

- 10% as an Advance Payment against the relevant guarantee
- 10% upon submission of the Inception Report
- 40% upon submission of the draft ESIA Reports
- 40% upon submission and approval of the Final Reports

Manpower Scheduling and Costs

In estimating man-month requirements and cost of the services, the consulting firm shall ensure that the proposal takes full account of all the above requirements and the following items:

Proposed Personnel for Consulting Firm

The key experts required for the Consultant's team, and their minimum qualifications and experience are:

- **Environmental Engineer (Team Leader) – 4 months**
 - Education: MSc. in Environmental Engineering or 'similar' relevant field
 - Experience: 10 years experience in carrying out ESIA's and preparing ESMP with 5 years experience in developing countries and must include being 'Team Leader' in at least 2 projects of a similar nature in developing countries.
- **Social Specialist – 4 months**
 - Education: MSc. in Social Sciences or 'similar' relevant field
 - Experience: 10 years experience in carrying out Stakeholder Consultation, ESIA's and preparing ESMP with 5 years experience in developing countries.

It is envisaged that inputs would be required from the following other experts:

- **Hydrologist**
- **Archaeologist**
- **Biodiversity Specialist**

The language of all reports will be English and all experts shall have a good command of English.

The Consultant must specify the qualifications and experience of each expert to be assigned to the assignment. For each key expert proposed, curriculum vitae of about 4 pages should be provided detailing the relevant experience and qualifications. Members of the consultancy team must have working experience in developing countries. Each key expert will provide a letter of commitment, confirming their availability for the study.

All team members must be present in Belize when conducting their assignments.

Coordination and Facilities

The MOWT is the executing agency for the Consultancy. The Consultant shall report to the Project Execution Unit Coordinator located within the MOWT. The IDB Project Team will have a supervisory role entailing evaluation and monitoring of the study and reviewing and approving the study in consultation with the Chief Engineer, MOWT.

The MOWT will facilitate the issuing of any permits required for the Consultant to carry out their duties and make available all relevant reports, documents, maps and data.

The MOWT shall designate personnel to be mentored in all or specific aspects of the Study.

5. COMMENTS BY THE CONSULTANTS

The consultants are requested to make comments on and suggestions for, improvements to these TORs. The financial implications, if any, of these recommendations should be indicated separately in the Financial Proposal.

Project: Project Preparation Studies for George Price Hwy Rehabilitation
BL-T1063

Period comprised in this Procurement Plan: From December, 2013 to October, 2014

Ref. No. ¹	Description of and category of procurement contract	Estimated cost in (US\$ thousand)	Procurement method ²	Review (ex ante or ex post)	Source of financing and percentage		Prequalification ³ (Yes/No)	Estimated Dates		Status ⁴ (pending, in process, awarded, cancelled)	Comments
					IDB %	Local / Other %		Publication of specific procurement notice	Completion of contract		
	GOODS										
	WORKS										
	NON-CONSULTING SERVICES										
	CONSULTING SERVICES										
	Component 1 & 2										
	Engineering Studies & Economic Feasibility Studies	350	QCBS	ex ante	100%	0%	No	December, 2013	October, 2014	In process	Components 1 & 2 will be hired under the same contract
	Component 3										
	Social and Environmental Studies	150	QCBS	ex ante	100%	0%	No	December, 2013	October, 2014	In process	
	Componente 4										
	Project Supervision	40	QCNI	ex ante	100%	0%	No	March, 2014	October, 2014	Pending	According to table 2 in the TC Document, the Counterpart will provide with additional US\$ 135.000 in-kind to support the supervision of Components 1, 2 & 3. Therefore that amount is not subject to any procurement process.

¹ If there are a number of similar individual contracts to be executed in different places or at different times, these can be grouped together under a single heading, with an explanation in the comments column, indicating the average individual amount and the period during which the contracts would be executed. For example: an education project that includes school construction might include an item labeled "School Construction" for an estimated cost of US\$20 million and an explanation under the Comments column such as this: "This item encompasses some 200 contracts for school construction averaging US\$100,000 each, to be awarded individually by the participating municipal governments over a three-year period between January 2006 and December 2008."

² **Goods and Works:** **ICB:** International competitive bidding; **LIB:** limited international bidding; **NCB:** national competitive bidding; **PC:** price comparison; **DC:** direct contracting; **FA:** force account; **PSA:** Procurement through specialized agencies; **PAs:** Procurement agents; **IA:** Inspection agents; **PLFI:** Procurement in loans to financial intermediaries; **BOO/BOT/BOOT:** Build, own, operate/build, operate, transfer/build, own, operate, transfer; **PBP:** Performance-based procurement; **PLGB:** Procurement under loans guaranteed by the Bank; **PCP:** Community participation procurement; **Consulting Firms:** **QCBS:** Quality- and cost-based selection; **QBS:** Quality-based selection; **FBS:** Selection under a fixed budget; **LCS:** Least-cost selection; **CQS:** Selection based on the consultants' qualifications; **SSS:** Single-source selection; **Individual Consultants:** **QCNI:** Selection based on comparison of qualifications of national individual consultants; **QCII:** Selection based on comparison of qualifications of international individual consultants.

³ Applicable only to Goods and Works in case the new Policies apply. In the case of previous Policies, it is applicable to Goods, Works and Consulting Services.

⁴ Column "Status" will be used for retroactive procurement and when updating the procurement plan.