

Technical Cooperation Document

I. Basic Information for TC

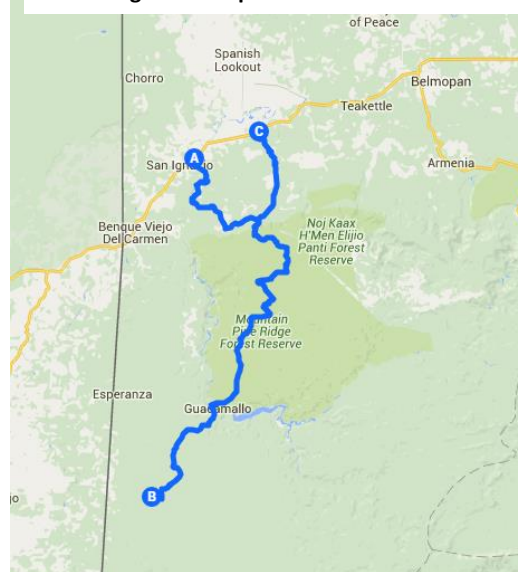
▪ Country:	Belize/CID
▪ TC Name:	Project Preparation Studies for the Rehabilitation of the Caracol Road
▪ TC Number:	BL-T1072, BL-T1079
▪ Team leader and members:	Amado Crotte, Team Leader (TSP/CME); Sergio Deambrosi , Alejandro Taddia, Ernesto Monter, Jacob Veverka, and Caterina Vecco (INE/TSP); Michele Lemay y Melanie Argimon (INE/RND); Sybille Nuenninghoff (RND/CBL); Cassandra Rogers (RND/CBA); Graham Burns Williams (FMP/CCR); Jane Chow (CID/CBL); John Primo (FMP/CBL) and Taos Aliouat (LEG/SGO)
▪ Taxonomy:	Operational Support
▪ Operational Support TC,:	BL-L1022 Caracol Road Rehabilitation ¹
▪ Date of TC Abstract authorization:	April 11 th , 2015
▪ Beneficiary:	Ministry of Works and Transport Ministry of Tourism, Culture and Civil Aviation Ministry of Forestry, Fisheries and Sustainable Development
▪ Executing Agency:	Government of Belize through the Ministry of Works and Transport
▪ Donors providing funding:	Fund for Biodiversity and Ecosystem Services Program (BIO): US\$300,000; Infrastructure Project Preparation Fund (InfraFund): US\$300,000
▪ IDB Funding Requested:	US\$600,000
▪ Local counterpart funding, if any:	US\$150,000 (in-kind)
▪ Disbursement period:	24 months disbursement (18 months execution)
▪ Required start date:	November 2015
▪ Types of consultants:	Firm and individual consultants
▪ Prepared by Unit:	TSP/CME
▪ Unit of Disbursement Responsibility:	CID/CBL
▪ TC Included in Country Strategy:	Yes
▪ TC included in CPD:	Yes
▪ GCI-9 Sector Priority:	a) Support Climate Change initiatives and environmental sustainability, b) Support to small and vulnerable countries

¹ The Operation BL-L1022 is in the early stages of development for which this TC will play the important role of determining the feasibility and preliminary details of the operation. The operation is expected to be approved in the second semester of 2016.

II. Description of the Associated Loan/Guarantee

- 2.1 The Government of Belize (GoBL) has requested the Bank to support the rehabilitation and upgrading of the Caracol Road (BL-L1022 Caracol Road Rehabilitation Program). The objective of the Caracol Road Rehabilitation Program is to enhance the competitiveness of Belize's tourism sector, in a socially and environmentally sustainable manner. The Caracol road lies within an area of Mayan forest corridor, all under some form of national protection, either forest reserve or national park or archeological reserve and thus the Bank's additionality will go beyond rehabilitation of the road itself, but in assisting the GoBL in identifying the necessary arrangements to safeguard the biodiversity and the cultural aspects in the area.
- 2.2 The BL-L1022 operation will improve the condition of the road through the rehabilitation segments in critical conditions, particularly drainage, culverts and bridges. It is expected that the rehabilitation of the road will: (i) promote economic growth by improving access to the Caracol Archaeological Reserve and other tourism attractions located along the transport corridor and by reducing transport costs for agricultural and timber production; (ii) improve security for local businesses, tourists, and residents; and (iii) contribute to the maintenance of ecosystem services associated with the road, including biodiversity, climate change resiliency and adaptation and disaster risk reduction. The current TC is one of two TC's that will support the development of the Loan Operation. It will determine preliminary feasibility and scope of the operation. The other TC will be the final designs for the technical works.
- 2.3 The road is a "Y" intersecting the George Price Highway (i.e. Western Highway) at Santa Elena and Georgeville at its northern end, and ending at the Caracol Archaeological Reserve in the south (Figure 1). The road is 94 kilometers in length² in varying states of repair.³ There is some commercial activity (agriculture and tourism) on both arms of the road, where some sections are paved but in a bad condition. The rest of the road is winding and mostly unpaved, with over 20 small bridges that need maintenance and/or replacement. The road provides access to tourism, agriculture, and logging areas, important economic sectors in Belize.

Figure 1: Map of the Caracol Road



² The western arm to Santa Elena is 20 kms in length. The eastern arm to Georgeville is 14 kms in length. The remainder of the road from the intersection of the western and eastern arms to the Caracol Archaeological Reserve is 60 kms.

It should be noted that the Ministry of Works and Transport (MOWT) is currently rehabilitating a short section of the Caracol Road between San Antonio and Cristo Rey, which will be taken into consideration in the project feasibility studies.

- 2.4 According to the World Tourism and Travel Council, tourism and travel is the most important economic sector in Belize, as it directly contributed with 13.5% of GDP in 2013, and including indirect and induced effects it represented 36.6% of GDP. However, Belize's high developmental potential, particularly in its primary economic sectors of tourism and agriculture, is not being realized, attributed in part to limitations in the country's transport system. The tourism sector, for instance, has had its growth impeded significantly due to the lack of access (or poor access) to key tourism attractions.
- 2.5 The Caracol Archaeological Reserve, the largest known Mayan archaeological complex in Belize, along with other attractions such as the Mountain Pine Ridge and the Chiquibul Forest Reserves, are part of a tri national bioregion forming the largest remaining contiguous block of tropical broadleaf forest north of the amazon. These assets, an area of undeveloped tourism potential, can only be accessed by the Caracol road, whose poor condition makes access difficult. The National Sustainable Tourism Master Plan has prioritized the expansion of the road network to ensure adequate connectivity to Caracol Archaeological Reserve and to the Mountain Pine Ridge Forest Reserve.⁴
- 2.6 Similarly, the agricultural sector must assume high costs to move goods due to substandard roads. Within the project area the agricultural production occurs along the western arm of the "y", consisting of basic subsistence agriculture production. Timber production also occurs along the road in the forest reserves controlled by the Forestry Department.
- 2.7 Belize lies in the subtropical geographic belt and has a climate governed strongly by seasonal variations in rainfall. In recent years, tropical storms and hurricanes have affected the country recurrently.⁵ Climate change and climate variability are likely to increase rainfalls above the already significant rainfall the area receives and raise sea levels, worsening the impacts of severe weather events.⁶ Increased precipitation 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 projections. At present, the Caracol road is not designed over its entire distance to withstand the area's heavy rainfall and often becomes impassible in sections during the rainy season, especially on the road segments on either side of the Guacamallo Bridge. Without rehabilitation, the situation will only worsen due to the effects of climate change.

⁴ The National Sustainable Tourism Master Plan (NSTMP) for Belize 2030: National Tourism Product Macro Program, page 12, 1.1.2 Sub-program for Infrastructure and Accessibility of Cultural Tourism lists as its first priority road and trail accessibility and within that "From the Western Highway to Caracol". Also, the Bank's operation BL-L1020 Sustainable Tourism Program II has a focus on directing more tourists to the Caracol Archaeological Reserve and the Mountain Pine Ridge and the Chiquibul Forest Reserve.

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

⁶ Climate change projections predict increased hurricane/storm activity and intensity to magnify the US\$136 billion in losses from 165 storm events between 1990 and 2008 for 14 Caribbean countries according to the Economic Commission for the LAC region.

III. Objectives and Justification of the TC

- 3.1 **Objective.** The objective of this Technical Cooperation (TC) is to support the development of technical, economic, environmental, and social feasibility studies to determine the appropriate technical alternative that takes into account the costs and benefits of different alternatives as well as the social and environmental impacts and required mitigation measures for the rehabilitation and upgrading of the Caracol road. More specifically, the TC will define through this technical input, the physical scope of the intervention, including: (i) technical alternatives to maintain year-round access to improve the level of service of the road through the development and evaluation of several investment scenarios; (ii) the works needed to mitigate the effects of heavy rains and climate change; (iii) critical points along the road in terms of road safety that must be addressed; (iv) the necessary environmental and social mitigation measures to comply with the Bank's policies; and (v) a preliminary economic evaluation of the project.
- 3.2 **Justification.** This TC is necessary to ensure the economic, technical, environmental, and social feasibility of the proposed operation.
- 3.3 **Corporate alignment.** This TC is aligned with the objectives of the Ninth General Capital Increase (GCI-9) as the results will have co-benefits in mitigating the effects of climate change and natural disasters, promoting environmental sustainability, and will support the development of infrastructure for competitiveness and social welfare. Similarly, the TC is aligned with the Belize Country Strategy 2013 – 2017 (GN-2805) as it contributes directly to the strategic objective under Transport to improve road infrastructure to facilitate trade and integration and access to emerging tourist destinations.
- 3.4 The TC is aligned with the strategic objectives of the Fund for Biodiversity and Ecosystem Services Program (BIO) as the TC will, in the study for the rehabilitation of the Caracol road especially in the Mountain Pine Ridge and the Chiquibul Forest Reserves and the Caracol Archaeological Reserve, (i) assess and integrate the economic value of biodiversity and ecosystem services within Latin America and the Caribbean into infrastructure and (ii) support the implementation of a public investment that secures and enhances biodiversity conservation and the maintenance of ecosystem services. The TC is also aligned with the strategic objectives of the Infrafund (IPF) as it will make the Caracol Road more climate change resilient.

IV. Description of activities/components and budget

- 4.1 This TC will support the preparation of the technical, economic, environmental, and social studies required to assess the best alternative for the rehabilitation and upgrading of the Caracol road that can be achieved within the financial constraints of operation BL-L1022.
- 4.2 **Component 1. Technical feasibility study.** This component will finance a study to develop a minimum of three technical alternatives (possible types and quality of the infrastructure) that will take into account different financing scenarios and recommend one scenario to be implemented. To determine the alternatives, this component will include the following technical activities:
- (i) Analysis of all existing information
 - (ii) Traffic and road safety studies

- (iii) Preliminary geometric study and design
- (iv) Pavement structure analysis
- (v) Critical structure identification (e.g. slopes to be stabilized or drainages to improve)
- (vi) Road signaling and marking analysis

- 4.3 **Component 2. Economic feasibility study.** This component will finance a study to determine the economic feasibility of the Caracol Road rehabilitation project. The study will analyze the traditional benefits of a road operation, such as time savings and reduction in vehicle operation costs, as well as any benefits due to improved access to a significant tourism site and costs to eco-services provided by the tropical forests that much of the roadway traverses. Additionally, traffic growth forecasts will take into consideration potential growth in the size and value of the agriculture, timber and tourism markets. A sensitivity analysis will be carried out on investment costs and benefits (travel time and vehicle operation costs).
- 4.4 **Component 3. Social and environmental studies.** This component will finance the necessary studies to provide the information to assess each technical alternative as proposed under Component 1 in terms of its environmental and social impacts. The studies will include the generation and analysis of social and environmental baseline information, including biodiversity, hydrology and geology, land use, natural hazards, etc. The study will also identify and assess direct, indirect and cumulative social and environmental impacts and risks of the proposed alternatives, including natural disasters and climate change risks and the type of control, mitigations and compensation measures as well as the institutional arrangements to guarantee the successful development of the BL-L1022 operation. Given the attributes of the forest, all of which has some form of national protection (either forest reserve or national park or archeological reserve), the studies will focus on the potential impacts on these habitat. For example, the studies will also identify design features to protect the tropical broadleaf forest from illegal logging and overall from negative environmental impacts, to address security concerns of an improved road near the Guatemalan border, as well as alternatives aimed at promoting ecosystem services such as protection of biodiversity. The study will include a comprehensive action identifying the necessary mitigation measures required to control and prevent negative impacts, particularly the degradation or significant conversion of the forest and the protection of cultural sites, either directly or indirectly as a result of the enhancement of the road. The study will also include a strategy for the strengthening of institutions and other agencies involved in any capacity in the implementation of the action plan and a communication, participation and stakeholder engagement program.
- 4.5 **Component 4. Project supervision.** The component will finance the hiring of specialized consultants to support the Project Execution Unit (PEU) during the preparation and execution of the studies and the project audit.

Indicative results matrix

Objective	Results	Indicator	Unit of measure	Target	Means of verification
Development of technical, economic, environmental, and social feasibility studies to determine the appropriate technical alternative for the rehabilitation and upgrading of the Caracol road	Contribute to an increase in the number and an improvement in the quality of the specific investment projects which are prepared for submission to the Bank or other international, national, public or private organizations in an effort to secure loans or capital subscription	An approved design alternative	Approved alternatives	1	Approval of the Loan Proposal BL-L1022

Indicative products matrix

Output	Unit of measure	2016	2017	2018	Total	Means of verification
Technical and Economic Feasibility Study	Number of studies	1	-	-	1	Preliminary Design approved by the Government of Belize
Environmental and Social Impact Plan	Number of studies	1	-	-	1	Preliminary Design approved by the Government of Belize
Public Stakeholder Consultations	Number of stakeholder meetings	2	-	-	2	Preliminary Design approved by the Government of Belize
Supervision report of technical design	Number of studies	1	-	-	1	Preliminary Design approved by the Government of Belize
Audit	Number of studies	1	-	-	1	Preliminary Design approved by the Government of Belize

- 4.6 **Budget.** The total estimated cost of the technical cooperation is US\$750,000 of which up to the amount of US\$300,000 will be financed by the Infrastructure Project Preparation Fund (InfraFund) on a non-reimbursable basis, up to the amount of US\$300,000 will be financed by the Biodiversity and Ecosystem Services Program (BIO) Fund on a non-reimbursable basis and US\$150,000 by the Beneficiary by means of an in-kind contribution. Both funds are special programs that use ordinary capital. A breakdown of the indicative budget is shown below.

Indicative Budget (in US\$)

Activity/Component	Description	IDB/Fund Funding	BIO	Counterpart Funding (In-kind)	Total Funding
Component 1. Technical feasibility study	Preliminary engineering designs and costing	125,000	150,000	50,000	325,000
Component 2. Economic feasibility Studies	Market and economic feasibility studies	50,000	25,000	40,000	115,000
Component 3. Social and environmental studies	Scoping, and environmental and social impact assessment	100,000	100,000	50,000	250,000
Component 4. Project supervision and evaluation	Experts for technical supervision and evaluation of the TC	25,000	25,000	10,000	60,000
TOTAL		300,000	300,000	150,000	750,000

V. Executing agency and execution structure

- 5.1 The executing 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 administratively. The process of selecting consultants and firms financed with Bank's resources will be implemented in accordance with the *Policies for the Selection and Contracting of Consultants financed by the Inter-American Development Bank* - GN-2350-9 of March 2011.
- 5.2 The executing agency will prepare monitoring and evaluation reports every six months, including products delivered and results achieved. An audit will be completed upon project completion.

VI. Major issues

- 6.1 The risks identified for this TC are minor and do not represent an important deterrent for the development of this project. One of the risks associated with this TC involves the scarcity of data available for the road (traffic counts, surveys, cadastral maps, etc.) that could result in delays of some of the deliverables for the TC, while the data is collected or retrieved.
- 6.2 There are also risks involved in the institutional realm. The small size of Belize means that road projects of this dimension do not come up often, limiting the capabilities for the institutions to manage the bidding process and oversight of the studies development. To mitigate this risk, the Bank will work closely with the executing agency to ensure project quality and fairness in the bidding process. Where necessary outside consultants may be contracted with other sources of funds to be determined, in order to fill any capability gaps within the executing agency.

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-L1022, which has been classified as category "A" by the project team. It is estimated that this TC will not generate significant negative environmental and/or social impacts.
- 8.2 Safeguard Policy Filter Report and Safeguard Screening Form are saved under IDBDocs No. [39596507](#).

IX. Annexes:

- 9.1 The annexes required are as follow:

Annex I: [Request from Client](#)

Annex II: [Terms of Reference](#)

Annex III: [Procurement Plan](#)

BELIZE
Programming Mission 2015
6 February 2015
Aide Memoire

1. INTRODUCTION

- 1.1. An Inter-American Development Bank (IDB) mission visited Belize on February 6, 2015 to discuss the Bank's 2015 Country Program for Belize, as well as a preliminary program for 2016. The mission was led by Gina Montiel, General Manager of the IDB's Country Department for Central America, Mexico, Panama and the Dominican Republic, and also included Anneke Jessen, IDB Representative in Belize.
- 1.2. The Government of Belize was represented by Joseph Waight, Financial Secretary, Ministry of Finance and Economic Development (MFED), Yvonne S. Hyde, CEO - Economic Development and Yvette Alvarez, Senior Advisor (MFED), and Elvira Mendez, Junior Counsellor to the IDB for Belize. The mission included a meeting with the Prime Minister and Minister of Finance and Economic Development, the Hon. Dean Barrow.

2. SUMMARY OF DISCUSSIONS AND AGREEMENTS

- 2.1. **Macroeconomic and fiscal context.** The mission enquired about the current macroeconomic and fiscal situation and the effect of falling oil prices on growth and fiscal revenues. The Government informed the mission that it expects falling oil prices to have a positive effect on the balance of payments and growth, but that the fiscal balance will be affected by lower revenues from both domestic oil production and petroleum imports. At the same time, spending pressures have mounted and the Government may not achieve its primary surplus target of 1% of GDP for FY 2014/2015. Meanwhile, the recent strong dollar appreciation is cutting the value of EU grants received by the Government. The mission offered support to analyze fiscal reform options related to the petroleum sector that would strengthen the fiscal position while being acceptable to producers and consumers.
- 2.2. **Petrocaribe.** The mission asked the authorities how they see the future of the Petrocaribe agreement and its impact on Belize. The authorities explained that after strong inflows in 2013-2014, Petrocaribe financing is now declining as a result of lower oil prices and future flows may be only 1/3 of those seen in previous years. If the oil price falls below US\$50/barrel, financing terms will also become less advantageous (in terms of share of sales that can be retained for financing development projects, maturity and grace periods, and interest rate). So far, the Government has not used the funds for current expenditures but has allocated a large portion for infrastructure projects. The consequent increase in capital spending may not be sustainable in the medium term.
- 2.3. **Nationalizations.** The mission enquired about the current situation with respect to the two nationalized enterprises, Belize Telecommunications Limited (BTL) and Belize Electricity Limited (BEL). The Government informed the mission that the Caribbean Court of Justice

(CCJ) is expected within the next six months to issue its ruling on the constitutionality of the nationalizations. If the CCJ declares the nationalizations constitutional, the subsequent legal process to determine appropriate compensation could take another year.

- 2.4. **2015 Loan Program.** The Government reaffirmed its interest in the two investment loan operations that are currently in the 2015 pipeline, for a total of US\$30 million, and will send the Bank the relevant request letters to this effect.
 - a. BL-L1020 – Sustainable Tourism Program II (US\$15 million). Preparation of this program is underway and the IDB expects to submit it to the Board for approval in September. The program foresees three components: (i) investments to enhance tourism products and destinations; (ii) destination climate resilience; and (iii) institutional strengthening. Program design is supported by two technical cooperation grants (TCs) approved in 2014 (BL-T1054, BL-T1064/71). An identification mission will visit Belize from February 23-March 3.
 - b. BL-L1021 – Solid Waste Management Program (US\$15 million). This program will expand modern solid waste management to areas not covered under the first solid waste program. Its design is supported by a TC approved in 2014 (BL-T1067). A mission will visit Belize from February 17-20 to determine the program's scope, including the availability of land for new landfills in the north and the south.
- 2.5. The mission informed that the Bank's initial 2015 OC allocation for Belize is US\$15 million, but that additional resources would likely be available later this year to cover the rest of the program.
- 2.6. **2016 Loan Program.** The Government reaffirmed its interest in the Caracol Road project, which the Bank has entered in its 2016 pipeline. The mission confirmed that it will seek grant financing under the 2015 TC program to undertake preliminary studies to determine the cost of the project and support subsequent designs. The authorities requested that the feasibility studies address the socio-economic and, particularly, the security impacts of opening up the area leading up to Caracol to increased tourism and traffic flows.
- 2.7. The authorities moreover expressed interest in exploring the possibility of a second citizen security project once the Community Action for Public Safety program (CAPS) comes to an end. They indicated that, pending further internal discussion and an assessment of the results of CAPS, they might ask the Bank to finance preliminary studies to this effect. The mission will analyze the timeline for CAPS and attendant technical assistance needs. In response to the mission's enquiry as to the Government's interest in a public sector energy efficiency program, the authorities responded that they have not yet taken a decision.
- 2.8. **Technical Cooperation Program.** The authorities reaffirmed their interest in a 2015 TC program that includes continued support in the transport sector, support for strategic planning and monitoring in the Ministry of Agriculture and the Belize Agricultural Health Authority (to ensure sustainability of the results achieved under the Agricultural Support Program that ends this year) and Belize's inclusion in the Bank's Emerging Sustainable

Cities Initiative. They requested that priority be given to those TCs that will directly support preparation and execution of the loan program and the priority areas of the country strategy. The authorities also asked that possible Bank interventions in the sugar industry (where MIF has a pipeline grant) be closely coordinated with the MFED (CEO, Economic Development), in order to ensure complementarity with current and planned EU support in that sector. Table 1 outlines the preliminary TC program for 2015 and also includes planned MIF projects and the special project grant under which the expected CIF funding for the George Price Highway rehabilitation will be processed. Separately, the Bank expects to finance a SIEPAC study for Belize under a regional pipeline TC (RG-T2480).

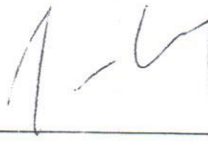
Table 1: Preliminary 2015 TC and Grant Program
(Indicative, subject to funding availability)

No	Name	Amount (US\$)
BL-T1065	Support for Preparation of National Transport Master Plan	880,000
BL-T1072	Preliminary Studies for the Caracol Road	700,000
BL-T1073	Strategic Planning to Strengthen Agricultural Trade and Food Safety	350,000
BL-T1076/77	Emerging Sustainable Cities Initiative	1,100,000
	Total 4 TCs	3,030,000
BL-M1011	Mobilizing Access to SME Finance through Improved Capacity	150,000
BL-M1012	Creating a Sustainable Sugar Cane Industry in Belize	1,000,000
	Total 2 MIF Grants	1,150,000
BL-X1001	George Price Highway Rehabilitation (CIF Funds) €5 million*	5,660,000
	Total 1 Grant*	5,660,000
	TOTAL Program (including expected CIF financing)	9,840,000


*estimated amount in US\$ is based on current US\$/€ exchange rate (February 10, 2015).

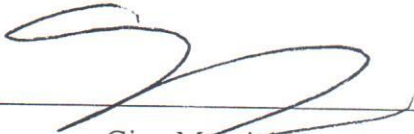
- 2.9. **Execution Issues.** The mission congratulated the authorities on the progress achieved in portfolio execution, particularly in the citizen security, Agriculture and Flood Mitigation projects. Loan disbursements in 2014 reached US\$7.42 million, equal to 36% of the undisbursed balance on the eligible loan portfolio as of January 1, 2014. The authorities expressed their appreciation for the IDB’s work in Belize, including the strengthened fiduciary presence in the country office and the training provided to project executing units (PEUs) in portfolio management, which has contributed to improved portfolio execution.
- 2.10. The mission noted that the existing portfolio is executing well, with the exception of the Placencia wastewater project (BL-L1015) where discussions are currently underway for a partial cancellation of loan funds. The authorities requested that the remaining funds be used to support implementation of a nutrient fate study well as some much-needed improvements in water infrastructure in the area, and also confirmed their willingness to finance sanitation upgrades in areas of the peninsula with the most acute needs, with a view to addressing those needs in the short/medium term and testing new technologies that could eventually be adopted across the peninsula. The authorities concurred with the mission on the desirability not to extend project disbursements beyond the current deadline (April 2016) and to conclude remaining procurement activities in a timely fashion to that effect.

- 2.11. As regards the George Price Highway Rehabilitation program (BL-L1019), which was approved on November 19, 2014, the authorities indicated that they will await the CIF Board's final decision on a €5 million grant contribution for the project (expected in March) before signing the loan and deciding on the use of the loan funds that would be "freed up" by this contribution. The authorities mentioned that they might decide to use freed-up funds to extend road rehabilitation all the way to the border with Guatemala at Benque Viejo, including possible infrastructure upgrades at the border. A loan signing ceremony could be organized in Washington in the months following the CIF decision. Regarding the issue of the falling value of the euro and the shortfall this has generated in the CIF portion of funding for the GPH project, the authorities indicated that they would discuss this matter with the EU to gauge the possibility of an increase in the CIF allocation.
- 2.12. The mission reiterated its willingness to support efforts to improve road maintenance management in Belize, including efforts to strengthen the Road Maintenance Unit in the Ministry of Works and Transport and design of sustainable funding mechanisms.
- 2.13. **Analytical program.** The parties discussed the challenges Belize faces in the area of statistics. The authorities indicated that they have pending internal discussions on this issue but might be interested in Bank support once they define their priorities. The mission indicated that the Bank stands ready to offer support in this area and that one possibility the authorities might consider could be a partnership with statistics authorities in another country (e.g. Canada) for purposes of knowledge transfer. The Bank recently published a Technical Note on Statistics in Belize (IDB-TN-728). The mission also offered to support studies in the area of ports (including Commerce Bight), pending further Government indications to this effect.
- 2.14. The mission informed that the Bank's regional study program for Central America currently includes studies on public spending in health and education, and logistics. The Bank strives to include all its borrowing member states in regional studies. For the purpose of including Belize in the health/education spending study, a consultant visit to the country is not needed as the Bank already has the data needed. The authorities indicated that they have no objection to including Belize in this study.
- 2.15. The mission concluded with a meeting with the Hon. Dean Barrow, Prime Minister and Belize's Governor to the IDB.



Joseph Waight
Financial Secretary
Ministry of Finance and Economic Development





Gina Montiel
General Manager CID
Inter-American Development Bank

Date of signature: 18th February 2015

Terms of Reference

Consultancy Services for the Technical and Economical Feasibility Studies for the Rehabilitation of the Road Accesses to the Caracol Archeological Site

1. INTRODUCTION

Belize is a small tropical country with a lightly spread population of 340,786. The country and its infrastructure, especially in the low lying coastal areas, are critically vulnerable to frequent tropical storms and hurricanes, flood damage and rising sea levels.

Belize's road network consists of 3,281 km of roads, of which 573 km are primary roads or highways, 765 km are secondary roads and 1,943 km are rural roads. Only 20% of the road network is paved. The existing network of roads and bridges is severely impacted by recurrent flooding. In recent decades tropical storms and hurricanes have recurrently affected the country. Impacts are likely to worsen due to increased rainfall and sea level rise associated with climate variability and climate change. Insufficient maintenance coupled with under designed road alignments are contributing to both high internal freight costs and to one of the highest road fatality rates in the Latin American region.

The Caracol Archeological Reserve, the largest known Maya archeological complex in Belize, along with other attractions such as the Mountain Pine Ridge and the Chiquibul Forest Reserve¹, are part of a tri national bioregion forming the largest remaining contiguous block of tropical broadleaf forest north of the amazon. These assets, which attribute the area with a tourism potential which until now has not been developed, can only be accessed through the Caracol road.

To reach the Caracol Archeological Reserve from the George Price Highway (GPH), there are two entryways, originating in Georgeville and Santa Elena, respectively, which converge into one road approximately 14 miles after Georgeville. By the route from Georgeville, it is about 46 miles (74 kilometers) from the GPH to the ruins of Caracol. The two hour rough ride to Caracol includes overall decent road conditions except for the approximately five miles around the Guacamallo Bridge, where the condition is poor and a problem year-round. The entire road is unpaved, except for the nine miles closest to Caracol which were upgraded 12 years ago to a paved surface (single layer chip seal). However, this paved section has not been maintained sufficiently and has notably deteriorated. By the route from Santa Elena, it is about 52 miles (82 kilometers) from the GPH.

The origins of roads in the region date back to the 1890's when, it is reported, hardwood logging took place in the Southern portion of the Chiquibul forest. In the early 1900's limited logging activity also occurred with coinciding increases in road building activity. However, it was not until after 1944 when laws were passed for the control and protection of the forest in the region, that work began on the Agustin Forest Station (renamed Douglas Da Silva Station in 1992) and an extensive network of roads began to be constructed.

The first modern road construction occurred in the 1950's with the construction of the Guacamallo Road leading to the Chiquibul Forest. Before the Caracol Archeological site could be properly linked with the Mountain Pine Ridge road, a large bridge was required

¹ Chiquibul National Park is Belize's largest national park. It is 1,073 km² (414 sq mi) in size. The park is located in Belize's Cayo District. The national park surrounds Caracol, a Mayan city.

over the upper reaches of the Macal River. This bridge, called the Guacamallo Bridge, was built in 1957 reportedly under the supervision of the FD.

The FD constructed the first official Caracol road in the early 1980's. The Forest Department Road Unit (FDRU) undertook further upgrading of the road from Guacamallo Bridge to Caracol Archeological Reserve in 1992, further improving access. A resurfacing was completed in April 1999 from San Antonio to Guacamallo Bridge and the Chiquibul Road was improved and compacted.

More recently, the Forestry Project funded by the Inter-American Development Bank (IDB), made important investments to improve the access to the Caracol Archeological Reserve. Its project sub-component Site & Access Improvement was for the completion of the final design and upgrading of the access road to Caracol, from both the Santa Elena and Georgeville junctions off the GPH. The plan also called for the paving of the road through the villages of Georgeville, Cristo Rey and San Antonio and to widen sections of the road as well as construct appropriate drainage throughout the length of the road. The final output was to be a first class rural road.

The aforementioned objectives were satisfactorily completed. All sections of the road were completed as per agreement with the paving of portions through the two major villages, the surface improvements, the widening in some areas, cutting back/down of hills/elevations, the straightening of sections of the road, the installation of culverts and drains and the erection of road guards in some critical areas. The most critical section of the road is from Caracol site to the junction with the Millenario Road spanning approximately 16 km. This area was virtually a mud rut trail passable only with four-wheel drive vehicles during dry weather. Under the consideration of the level of investment at Caracol and the long-term implications of an upgraded road, the decision was made that it would be more cost efficient and effective to have this section paved. The pavement of the road with line dividers, installation of culverts and drains and the erection of guardrails was completed in September 2004. The road segment between Cristo Rey and San Antonio (10 miles length) is now under construction.

The Belize Government has acknowledged that the tourism and agricultural sectors in the Chiquibul- Caracol Complex would benefit from updating the Caracol road. The rehabilitation of the Caracol road aims to: (i) promote economic growth by reducing transport costs for agricultural and timber production; (ii) improve access to the archeological site and other tourism attractions located along the transport corridor; and, (iii) contribute to the maintenance of ecosystem services associated with the road, including biodiversity, climate change mitigation and adaptation and disaster risk reduction.

2. OBJECTIVE

The objective of the Consultancy is to determine the economic and technical feasibility of the rehabilitation of the Caracol road. The study will develop technical alternatives for two scenarios, a low traffic scenario with light vehicles for tourism purposes, and a higher specifications road for freight traffic, primarily for transportation of timber.

3. GUIDELINES

The Services shall be carried out in accordance with generally accepted professional practices, following recognized engineering and management principles and practices. The Consultant's scope of work is understood to cover all activities necessary to accomplish the stated objectives and outputs of the below services, while adhering to the aforementioned principles and practices. This is not an exhaustive list and the

absence of any 'activities' necessary for the Consultant to satisfy the objectives and outputs, does not preclude the Consultant's obligation to perform those activities.

The Ministry of Works and Transport (MoWT) is the primary counterpart and the party responsible for directing the Consultant to any necessary knowledgeable parties. All other governmental entities should be contacted through the MoWT.

Design Standards

The GoBL lacks a specific national design standard but recommends using AASHTO standards for a primary road of two lane undivided highway with unpaved shoulders with a design speed of 60 km per hour in rural settings and 40 km per hour in urban areas. The roadway should be designed to withstand and properly drain a one in 20 year storm, and major bridges should withstand a one in 100 year storm. Any standard should be agreed upon with the GoBL before proceeding with preliminary designs.

As with the standards guide, the project alternatives may deviate from the above ideal at the Consultants discretion and the GoBL's agreement to ensure that the project best meets the needs of Belize.

4. EXPECTED REHABILITATION MEASURES

This project is being undertaken to remedy certain deficiencies with the current roadway. Expected rehabilitation measures to remedy roadway deficiencies are, but are not exclusive to:

- Vertical and horizontal realignments;
- Improvements to the drainage system to provide resilience to the frequent severe storm events and climate change effects;
- Roadway widening;
- Rehabilitate or replace the dozen existing bridges;
- The addition of two roundabouts at the entrance to Georgeville and at the tripartite junction with Georgeville and the Santa Elena access roads;
- Pavement reconstruction for projected traffic 20 years from now in the nine lines road segment next to the Caracol Archeological Site;
- Improvements to 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 when no amenable solution can be found within the current right-of-way.

Some suspected locations of deficiency that should be more fully assessed are:

- The segments that connect the both ends of the Guacamallo Bridge (from Station 50+000 to 60+000)², show very sharp horizontal curves, and steep slopes. This geometric state is also associated with the lack of appropriate longitudinal and transversal drainage, which causes the surface to be permanently eroded. This results in a significant decrease in travel velocities by motorists.
- In the design of a new structure over the Macal River to replace the existing structure (Guacamallo Bridge) is recommended to consider any hydrologic change in the design and construction of the proposed bridge associated with the existing dam located upstream. It is understood that the existing dam is regulating the waters upstream and also originated the Chalillo Lake; and

² The Station 0+000 is located in the junction of GPH and the road entrance at the Georgeville town and the Stations continuous progressing until to reach the Caracol Archeological Site.

- Poor road alignment at Stations: 2, 6, 18, 30, 35, 39, 42, 44, 47, 54, 55, 57, 58, 66, and 71.

The study will develop:

- Technical alternatives (possible types and quality of the infrastructure) for two scenarios, a low traffic scenario with light vehicles for tourism purposes, and a higher specifications road for freight traffic, primarily for transportation of timber;
- Analysis of short, medium and long term interventions; and
- Analysis to prioritize interventions (road sections, bridges/sewage system) considering environmental, social, technical and economic factors. Upon selection of the preferred alternative, the study will also include a traffic and road safety analysis, preliminary geometric study and design, structure analysis and identification.

The following scenarios will be analyzed among others:

- Scenario A: (i) horizontal and vertical improvement of the segment adjacent to the Guacamallo Bridge and longitudinal drainage improvement along with gravel overlay on the road surface; (ii) periodic maintenance work on the 14 kilometer segment next to the Caracol Archeological Site finishing with a double layer of double chip seal material on the road's surface; and, (iii) periodic maintenance activities on the rest of the road;
- Scenario B: (i) horizontal and vertical alignment of the road adjacent to the Guacamallo Bridge, road widening, longitudinal drainage overlay, and finish the road surface with gravel material; (ii) maintenance on the 14 kilometer road segment next to the Caracol Archeological site finishing with a double chip seal coat on the road surface; (iii) road improvement between Georgeville and Guacamallo Bridge, including the segment between the tripartite junction with Georgeville and the Santa Elena access roads and San Antonio town. The work activities (iii) are: vertical and horizontal realignment, road widening, longitudinal drainage overlay, and installation of gravel on the road surface.
- Scenario C: Scope described in Scenario B, plus the construction of 12 new bridge structures.
- Scenario D: Scope described in Scenario C, plus placement of a triple layer of double chip seal material on the road's surface.

5. SCOPE OF SERVICES

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 alternative to allow for: i) identification of design and/or 'constructability' constraints; ii) conceptual designs; and iii) 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. The cost of mitigating environmental and social issues will be determined in coordination with the Environmental and Social Impact Assessment Consultant.

The following tasks are required to achieve this contract's objective.

TASK 1: ROAD ASSESSMENT. The Consultant is to assess and evaluate the current condition of the road and structures and provide a traffic analysis.

The project is divided into five sections: (a) Section 1: Georgeville town to the tripartite junction with Georgeville and the Santa Elena access roads with a length of 3.1 miles (14 kilometers); (b) Section 2: The tripartite junction with Georgeville and the Santa Elena access roads to the Douglas Da Silva with a length of 15.5 miles (25 kilometers); Section 3: Douglas Da Silva to the Guacamallo Bridge with a length of 9.9 miles (16

kilometers); (d) Section 4: Guacamallo Bridge to the Caracol Archeological Site with a length of 11.8 miles (19 kilometers);, and (e) Section 5: Santa Elena town to the tripartite junction with Georgeville and the Santa Elena access roads with a length of 2.4 miles (20 kilometers). The MOWT is constructing the segment between Cristo Rey and San Antonio towns both located in Section 5. As a result, the Consultant must coordinate with the MOWT and its consultant and ensure continuity between the two project segments.

1.1. FUNCTIONAL / STRUCTURAL EVALUATION OF ROADWAY AND BRIDGE. The Consultant will need to establish the criteria and methodology necessary, with approval from the MoWT, 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.

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
- Geological, soil-materials, topographical, climatic, hydrological and drainage, and environmental characteristics and sensitivity.
- Test pits along the roadway
- Analysis of the structural integrity of existing bridges and culverts
- Local sources of materials and materials disposal areas.
- Soil profiles.
- Unit costs of rehabilitation and resurfacing of roadways and shoulders, to meet the requested design standard.

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

Drainage system and hydrological assessment. Given the existing and increasing prevalence of flooding, a drainage and hydrological assessment shall be carried out to determine the scope of drainage system rehabilitation needed to meet national standards and withstand a one in 20 year storm for the roadway and a one in 100 year storm for all bridges.

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

Surveys

The Consultant is required to perform topographic surveys for the existing road and for the new alignments and other locations that require a more detailed survey. 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 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.

1.2. 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.

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.

Road Safety. Based on existing statistics and self-elaborated surveys, the Consultant will determine present road accidents and fatality rates in the road segment under study, identifying and prioritizing road safety critical spots to be addressed during the rehabilitation.

TASK 2: IDENTIFICATION OF ROAD REHABILITATION ALTERNATIVES. Based on Task 1, the Consultant, in coordination with the MoWT, will identify the alternatives to be developed. The identification of alternatives should take into account physical and environmental restrictions, public consultations, road safety specifications and critical spots prioritization. This should be done with the aid of topography information and details. At least three alternatives must be proposed and presented to the MoWT and all other stakeholders.

TASK 3: CONCEPTUAL AND PRELIMINARY DESIGNS OF THE ALTERNATIVES

The Consultant will prepare conceptual works designs and corresponding cost estimates for all alternatives identified in agreement with the MoWT. These designs should adhere to national standards.

The Consultant will prepare preliminary engineering designs and cost estimates 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; and
- any other necessary designs.

Typical preliminary design drawings must be presented for each design option 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. All design specifics will be agreed upon with the MoWT.

TASK 4: ECONOMIC ANALYSIS. In order to achieve the objectives of the feasibility study, specific activities to be completed for all alternatives 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.

TASK 5: ELABORATION OF TERMS OF REFERENCE FOR THE FINAL DESIGNS

Once the Final Report is presented, the MoWT will choose one of the alternatives and the Consultant will prepare a complete Terms of Reference to launch the bidding process for final designs.

6. OUTPUTS/DELIVERABLES

Deliverables of the study shall be presented as follows:

- **Inception Report.** This should include a working plan with a detailed schedule of activities and a description of the working methodology to be followed during the studies.
- **Road Assessment and Alternative Identification.** This should provide the diagnosis of the road and the alternatives proposal. This is the result of tasks 1 and 2
- **Technical Feasibility Report** This should provide the preliminary engineering designs and cost estimates for the identified project alternatives. This is the result of task 3.
- **Economic Feasibility Report.** This should provide the economic feasibility evaluation of the project alternatives. This is the result of Task 4
- **Full Feasibility Report.** This will incorporate the above reports with a full description of all alternatives and present the preferred project alternative to the GoBL. This is the accumulation of all tasks 1 to 4.
- **Terms of Reference for the Final Designs.** This is the result of task 5.

The deliverables will 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.

7. CONSULTANCY SPECIFICATIONS

TYPE OF CONSULTANCY. The consultancy will require the services of an international 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 Belize and other countries 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 24 weeks.

LOCATION. The study shall be carried out in Belize and at the consultant based offices.

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 with each one of the paper copies.

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

- **The Inception Report** shall be submitted to the MoWT two (2) weeks after the commencement date of the contract.
- **The Road Assessment and Alternative Identification** shall be presented within eight (8) weeks after contract signing;
- **The Technical and Economic Feasibility Reports** shall be presented eighteen (18) weeks after contract signing;
- **The Full Feasibility Report** shall be presented no later than twenty (20) weeks after contract signing.
- **The Terms of Reference for the Final Designs** shall be presented no later than twenty four (24) weeks after the signing of the contract.

PAYMENTS. The payments will be done according to the following schedule:

- 10% as an Advance Payment against the relevant guarantee
- 10% upon submission and approval of the Inception Report
- 20% upon submission and approval of the Road Assessment and Alternative Identification
- 40% upon submission and approval of Full Report
- 20% upon submission and approval of the Terms of Reference

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, the Caribbean Region or Latin America
 - Or
 - Education: BSc. in Civil Engineering
 - Experience: 15 years experience in road design and road construction with 5 years experience in developing countries, the Caribbean Region or Latin America
 - - Must include being 'Team Leader' in at least 2 projects of a similar nature
 - in the Caribbean or Latin American countries.

-
- **Structural Engineer – 2 months**
 - Education: MSc. in Structural Engineering
 - Experience: 10 years experience in bridge design with 5 years experience in developing countries.
 - Or
 - Education: BSc. in Structural Engineering
 - Experience: 15 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.
 - Or
 - Education: BSc. in Hydrology or Hydraulics Engineering
 - Experience: 15 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.
 - Or
 - Education: BSc. in Geotechnical Engineering
 - Experience: 15 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.
 - Or
 - Education: BSc. in Civil Engineering
 - Experience: 15 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.
 - Or
 - Education: BSc. in Economics or Transport Economics
 - Experience: 15 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.

Environmental and Social Analysis (ESA)

Terms of Reference

I. BACKGROUND

- 1.1 The Government of Belize (GoB) requested the Bank's assistance for a Technical Cooperation (TC) (BL-T1072) aimed at providing client and operational support to conduct the necessary studies for the preparation of a future operation to rehabilitate the Caracol road (BL-L1022 Caracol Road Rehabilitation).
- 1.2 The GoB has acknowledged that the tourism³ and agricultural sectors in the Chiquibul-Caracol Complex would greatly benefit from the upgrading of the Caracol road by including it in the IDB 2014 and 2015 portfolio programming and The National Sustainable Tourism Master Plan 2012-2030 (NSTMP)⁴. The TC entitled "Project Preparation Studies for the Rehabilitation of the Caracol Road" (BL-T1072) is intended to support the development of technical and economic feasibility studies, as well as the needed environmental and social assessment for the preparation of the operation. Through this technical input, the IDB will be able to establish the physical scope of the program, prioritize investments, and determine project costs and benefits to substantiate the investments.
- 1.3 The road which provides access to significant tourism, agriculture, and logging areas, is currently a "Y" intersecting the George Price Highway (i.e. Western Highway) at Santa Elena and Georgeville at its northern end, and ending at the Caracol Archaeological Reserve in the south. The road is 94 kilometers in length⁵ in varying states of repair. There is some commercial activity (agriculture and tourism) on both arms of the road, where some sections are paved but in a bad condition. The rest of the road is winding and mostly unpaved, with over 20 small bridges that need maintenance and/or replacement. A number of important touristic assets including the Caracol Archaeological Reserve - the largest known Mayan archaeological complex in Belize - along with other attractions such as the Mountain Pine Ridge and the Chiquibul Forest Reserve, can only be accessed through the Caracol road.
- 1.4 Tourism is the most important economic sector in Belize. It is by far the largest earner of foreign exchange, accounting for 40% of total exports of goods and services from 2008-2012. Tourist expenditures equaled 18% of GDP from 2008-2012, an economic importance that is about average by the standards of other tourism-oriented Caribbean countries, but far higher than Belize's Central American neighbors. The World Tourism and Travel Council (WTTC) estimated that Tourism & Travel (T&T) in Belize directly contributed 13.5% of GDP in 2013. Total contribution, including indirect and induced effects, was 36.6% of GDP.
- 1.5 The Chiquibul-Mountain Pine Ridge (MPR) Complex, which the Caracol road traverses, is located far west near the border with Guatemala and nestled in the more mountainous

³ In parallel, the GoB also requested the Bank's assistance for a second phase of the "Sustainable Tourism Program" (STP II, BL-L1020) to expand the distribution of tourism benefits to less developed destinations in Belize

⁴ The NSTMP for Belize 2030: National Tourism Product Macro Program, page 12, 1.1.2 Sub-program for Infrastructure and Accessibility of Cultural Tourism lists as its first priority road and trail accessibility and within that "From the Western Highway to Caracol".

⁵ The road is Y shaped road. The western arm to Santa Elena is 20 kms in length. The eastern arm to Georgeville is 14 kms in length. The remainder of the road from the intersection of the western and eastern arms to the Caracol Archaeological Reserve is 60 kms.

region of the country. It is part of a tri-national bioregion forming the largest remaining contiguous block of tropical forest north of the Amazon, covering a land mass of 219,561ha dominated by mainly submontane broad-leaved moist forest cover. The Chiquibul-MPR complex is one of Belize's innermost biodiversity hotspots with recent figures for the Chiquibul National Park indicating the presence of approximately 786 species of fauna and 662 species of flora. This wealth of biodiversity is concentrated within four PAs, the Chiquibul National Park and Forest Reserve, Caracol Archaeological Reserve and Mountain Pine Ridge Forest Reserve, which make up the majority of the undisturbed forests of the Maya Mountain Massif (MMM) (Hammond *et al.*, 2011).

- 1.6 The Chiquibul-MPR Complex, which is located in its entirety within the Belize River watershed, supports the country with many ecosystem services comprised of direct and indirect benefits.⁶ Within the Chiquibul-MPR Complex, pine contribute substantially to the gross annual timber value in the area; with values for local markets for the complex estimated at US\$ 7.8 million for local markets to USD 8.7 million for a combination of local and export markets. Whereas the Chiquibul-MPR complex only harbors one watershed (the Belize River watershed) it represents the country's most important watershed as it supplies water to the majority of Belize's population. Besides the above provisioning services, the Chiquibul-MPR Complex also provides significant carbon sequestration and soil formation through the extensive area of broad leaf forests within its boundaries along with a wealth of genetic resources. Indirectly, the Chiquibul-MPR Complex contributes to the maintenance of coastal water quality by filtering sediments from the Belize Barrier Reef lagoon, which then ensures healthy nursery habitats important for fisheries productivity and healthy reefs that support diving and snorkeling tourism.
- 1.7 Ecosystems, such as the Caracol Complex pine forests, also provide important benefits for the design of more sustainable, cost-effective roads by for instance protecting the infrastructure from natural hazards through the provision of regulating and supporting services such as: flood and erosion control by containing water from excessive rainfall and preventing erosion and sedimentation from affecting coastal and urban areas. However these benefits are often not taken into account when making decisions about where and how to improve roadways, with possible severe consequences on both the road project, the environment and for surrounding communities.
- 1.8 Ensuring that these investments are made with minimal environmental impact is critical to protect ecologically unique site such as the Chiquibul-Caracol Complex as well as to deliver lasting, positive results for road users and affected communities. This consultancy is designed to support the government of Belize in the development of an international best practice environmental and social impact assessment for the road rehabilitation.

II. CONSULTANCY OBJECTIVES

- 2.1 The principal objective of this Consultancy is to conduct the needed environmental and social studies and investigations for the rehabilitation of the proposed Belize Caracol Road operation according to the Bank's E&S safeguards policies and operational procedures with minimum effect on local communities and the surrounding environment and cultural sites. The consultancy is to contribute to sector knowledge by placing a special emphasis on identifying and managing the risks and potential environmental and

⁶ A spatial characterization of the area has been undertaken as part of BL-L1020, see Environmental Research Institute, Mainstreaming Biodiversity, Ecosystem Services and Coastal Resilience in Tourism Development, Ecosystem Service Mapping and Review, 11 September 2015.

social impacts on ecosystem services and biodiversity resulting from the rehabilitation of the Caracol road.

- 2.2 The ESA is to directly support the preparation of the Technical study and Economic feasibility study performed under the other consultancies. The consultant shall provide the necessary information to the consultant producing the technical and economic studies to prioritize project alternatives. This shall be carried out in adequate detail for each project option to allow for expected cost of mitigating environmental and social issues, and provide cost estimates of any required mitigation measures based on the environmental and social feasibility with special emphasis on the impacts on biodiversity and ecosystem services, and on how including existing natural capital and ecosystem services in road design and construction can result in projects that are more cost effective, have enhanced net economic benefits for road users and communities, and are more resilient in the face of climate change, natural hazards, and other social and environmental changes.
- 2.3 The consultant will submit an ESA Report on the project alternatives, with a clear definition of specificities of the road to be rehabilitated providing an ecosystem services-based strategy. This report should be produced in accordance with the provision and regulations of the Belize Environmental Protection Regulations, the IDB Safeguards Policies, and should capture the aspects detailed in this TOR. The following description of the services to be performed is not restrictive. The Consultant may extend or deepen them as required to satisfy the principal objective, as needed and at his/her discretion, and is responsible for all the work done and studies performed.
- 2.4 The consultant should use as guiding documents in its analysis the following reports: (i) [“Good Practices for the Collection of Biodiversity Baseline Data”](#); (ii) [“Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning”](#) and (iii) the IDB BIO Program Publication [“Natural Capital and Roads: Managing dependencies and impacts on ecosystem services for sustainable road investments”](#).
- 2.5 This consultancy will carry out the necessary studies to provide information to assess each alternative in terms of its environmental and social impacts. The studies will include:
 - (i) Environmental and Social Baseline: Preparation and analysis of social and environmental issues⁷ baseline information, including biodiversity and ecosystem services, hydrological and geological characteristics, soil quality, land use, climate, natural hazards, etc.
 - (ii) Environmental and Social Impact Assessment: Identification and assessment of direct, indirect and cumulative social and environmental impacts and risks of the proposed alternatives with a special emphasis on biodiversity and ecosystem services, including natural disasters and climate change risk;
 - (iii) Environmental and Social Management Plan (ESMP). Design a an environmental and social management plan that covers the prevention, mitigation, correction or compensation of all potential impacts identified in the previous stages;
 - (iv) Institutional Recommendations. Provide recommendations for the strengthening of institutions and other agencies involved in any capacity in the implementation of the ESMP and a communication, participation and stakeholder engagement program.

⁷ See spatial characterization of the area has been undertaken as part of BL-L1020 (ERI report cited above)

III. SELECTED WORK ACTIVITIES

- 3.1 The ESA objectives are to ensure the road rehabilitation operation is developed and implemented according to the principles of environmental sustainability and social inclusion. The ESA will provide an assessment for two scenarios (i) a low traffic scenario with light vehicles for tourism purposes, and (ii) a higher specifications road for freight traffic, primarily for transportation of timber. Specifically, by placing a focus on ecosystem services and biodiversity, the purpose of this work is two-fold: (i) to carry out the socio-environmental analysis of the program, specifying the actions necessary to avoid or mitigate the environmental impacts and risks and maximize opportunities that may result from the individual actions/investments financed under the proposed program, and (ii) to provide specific recommendation to the GoB and the Bank on how best to manage the environmental and social risks and potential impacts resulting from the upgrading of the road.

IV. AREA OF STUDY

- 4.1 The area of study will cover the entire area of direct and indirect influence of the project including all areas in which the project may generate environmental and social impacts. Special attention must be paid to areas where the road intersects with the national park, human/agricultural settlements, industrial/commercial concessions, and the tourist facilities. The areas generally adjacent to the road infrastructure, where the general impacts in the stages of execution of the works and use of the road are most direct and intensive, constitute the areas of direct influence. The remaining areas, where the effects are indirect and of lower intensity, constitute the areas of indirect influence. These areas of direct and indirect influence must be delineated on a map at an appropriate scale, showing:

- The population centres, right of way and principal services;
- Relevant functional units even if only partially affected (e.g., protected areas, archaeological sites, wetlands, agricultural plots, commercial establishments, etc.);
- Other representative physical, biotic, socio-economic and cultural features, if possible.

- 4.2 The study shall include a characterization of the principal socio-environmental aspects that could be subject to indirect impacts during use of the road such as:

- The existing areas of human concentration.
- The areas required for encampments, quarries, dumps, fills, asphalt plants, etc.

V. TASK 1. ENVIRONMENTAL AND SOCIAL BASELINE

- 5.1 The Consultant will be required to carry out an Environmental and Social Baseline Assessment (ESBA). This section must provide (i) a complete description of the existing conditions, with particular on the natural capital (biodiversity and ecosystem services) within the Project area; and (ii) a review of all available data/study on the Project area as well as the area of indirect influence, placing special emphasis on key aspects of the existing natural capital which have the potential of being affected by the rehabilitation of the road.
- 5.2 The first phase of the baseline study will involve gathering existing information from published sources⁸, “grey” literature such as unpublished reports, and unpublished data.

⁸ The ERI Report undertaken as part of BL-L1020 will be provide particularly relevant information, see Environmental Research Institute, Mainstreaming Biodiversity, Ecosystem Services and Coastal Resilience in Tourism Development, Ecosystem Service Mapping and Review, 11 September 2015.

This information will be compiled and consultation meetings will be conducted in the region with relevant stakeholders.

5.3 The ESBA should include a detailed description of the following:

- i. Ecosystem services. Information should be compiled as classified in the TEEB⁹ on the project areas (i) provisioning services; (ii) regulating services; (iii) cultural services; and (iv) supporting services. Where potentially significant project-related risks to ecosystem services or project-relevant ecosystem services, “Priority Ecosystem Services”¹⁰ will be identified. The baseline assessment of ecosystem services within the area of influence of the project will be carried out at two levels: 1) qualitatively for priority ecosystem services identified by stakeholders; 2) quantitatively by assessing areas of provision of ecosystem services for a subset of priority ecosystem services that are most relevant to stakeholders. The choice of services for each level of the assessment will be based on a set of criteria such as: relevance to the local stakeholders, relevance in protecting and local communities from natural hazards and climate variability, modeling complexity/data availability, and expected degree of impact by the project. Consultations with stakeholders will be held to among other things, identify priority ecosystem services for qualitative and quantitative assessment; identify areas important for the maintenance and provision of the prioritized ecosystem services; conducting a quantitative assessment for a subset of priority ecosystem services using a suite of off-the-shelf models and gathered information.
- ii. Biodiversity. The biodiversity baseline will be built upon existing information and with the addition of new information to fill gaps. This baseline will identify valued (i) ecosystem components, (ii) critical natural habitat, and (iii) natural habitat found in the area of influence of the Caracol Road Complex. These valued ecosystem components will include (i) species of importance to people, (ii) keystone species, (iii) wide-ranging species, (iv) migratory species, invasive species, (v) endemic species, (vi) threatened species (taxa evaluated by the IUCN Red List and range restricted endemic species). The baseline study will also identify species predicted to be susceptible to direct and indirect impacts from the road upgrading and potentially problematic invasive species. Specific activities will include identification, mapping, and categorization of major habitat types in the area of influence of the road, synthesis of existing and new biodiversity information, and identification of critical natural habitats and natural habitats
- iii. Climate variability. This study will review how increasing frequency and severity of extreme events due to climate change may impact biodiversity, ecosystem services, and livelihoods in the defined area of influence of the Caracol Road Complex. Specific activities will include describing current climate and historical trends for the area of influence of the Caracol Road Complex, review future projections including changes in precipitations and temperature variability, and consultations with stakeholders on their perceptions.

⁹ <http://www.teebweb.org/>

¹⁰ Priority Ecosystems Services are defined as (i) those services on which project operations are most likely to have an impact and, therefore, which result in consequent adverse impacts to affected Communities and/or (ii) those services on which the Project is directly dependent for its operations or successful implementation (e.g., forest watershed protection for erosion control, flooding, etc.).

- iv. The Biophysical environment. Information will also be compiled on the following aspects: geology, soils, land use (present and historical land use), hydrology, meteorological conditions and patterns, watersheds, drainage and irrigation, water use, water quality, air quality, environmental noise, etc.
- v. The socio-economic environment. information will be compiled on the following aspects: population, level of education, health , income, social characteristics, traffic patterns, types of businesses that might be affected, identification of lots and necessary relocation of constructions or commercial sites, infrastructure services that might be affected (drainage, irrigation, sewers, electrical utilities, gas-lines and others), etc.
- 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).
- vii. 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. TASK 2. THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

- 6.1 This activity will be three-fold: (i) identification and assessment of direct, indirect and cumulative social and environmental impacts and risks of the proposed alternatives with a special emphasis on biodiversity and ecosystem services, including natural disasters and climate change risk; (ii) identification of environmental liabilities; and (iii) stakeholder consultation process to further listen to the expectations and concerns of the population regarding the scope of the project before implementation begins.
- 6.2 This assessment must consider risks and impacts throughout the project cycle, including when the road comes into use taking into account compliance with local regulations and the IDB Safeguards provisions. 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 and assessing impacts based on (i) a low traffic scenario with light vehicles for tourism purposes, and (ii) a higher specifications road for freight traffic, primarily for transportation of timber. Impacts should be assessed based on the information collected during the Environmental and Social Baseline Assessment (ESBA) conducted by the Consultant. It is good practice to present a GIS-based spatial analysis of the area of influence of the project, including the physical footprint as well as layers depicting the spatial extent of other impacts such as those related to air and water quality. In some cases, map layers may also be available showing indirect impacts such as areas of human settlement that may expand due to the influence of the project. Map layers depicting natural habitats and their condition, developed in the Biodiversity Baseline Study, can be overlaid on impact layers to quantify the area of each habitat type impacted by the project.

6.3 The Consultant will be expected to capture the following information:

- i. **Identification of direct and indirect project's impacts on biodiversity and ecosystem services** within an area of influence of the Caracol Road Complex for a set of stakeholder agreed scenarios for future development. For biodiversity, the impact assessment will focus on impacts on critical species, land use change and habitat loss, and changes in connectivity. For the impact assessment on ecosystem services the consultant will propose a methodology and also facilitate local stakeholder's consultations for the scoping, impact analysis and identification of mitigation measures. Given the attributes of the forest, all of which has some form of national protection (either forest reserve, national park or archaeological reserve) the study will place particular focus on the potential impacts on these habitats associated ecosystem services. Identification of drivers of change and possible scenarios of the future development (e.g., expansion of agriculture, increased timber harvesting and tourism visits) will be undertaken in consultation with local stakeholders. The choice of biodiversity and ecosystem services for the impact assessment will be based on a set of criteria such as: relevance to the local stakeholders, relevance in protecting the road and local communities from natural hazards and climate variability, modeling complexity/data availability, and expected degree of impact by the project. The consultant will use existing information and new information from modeled scenarios and from local consultations to synthesize the potential direct, indirect, and, if possible, cumulative risks and potential impacts on biodiversity and ecosystem services associated with the upgrading road based on different scenarios.
- ii. **Characterization of the potential impacts upon other physical, biological and social components and ecosystems** in the area of social and environmental influence traversed by the proposed road not analysed in the prior assessment and deemed relevant. (Examples: damage to protected areas, induced flooding, urbanization and land use change, impacts on properties, restrictions of land use, barrier effect, etc.).
- iii. **Demarcation of impacts on the fragile and/or protected ecosystems** located in the vicinity of the future road rehabilitation and the impacts on these ecosystems including loss of habitat, etc. are to be considered.
- iv. **Identification of impacts on the water ways** crossed by the road and bridges and the environmental problems resulting from narrowing of their widths, erosion, blockage of streambeds, etc. As well as evaluation of the principal water uses and identification of potential impacts on water quality due to accidents or transportation of hazardous materials.
- v. **Impacts 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 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.
- vii. **Impacts on the archaeological, historical, cultural and tourist sites** in proximity to the road and evaluation of the positive and negative impacts of improved access to these areas.

- viii. **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.
- ix. **If expropriation and compensation of the inhabitants or commercial enterprises** becomes necessary, the consultant will identify 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 must prepare a resettlement plan in accordance with the guidelines for involuntary resettlements¹¹.
- x. **Quantify and assign priorities to the impacts** and classify them according to their importance, the permanence of the impact (temporary, permanent), the sphere of influence (local, regional, etc), mitigability and other appropriate characteristics.
- xi. **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.
- 6.4 The environmental specialists will also have to actively participate with the technical 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. Definition of alignment, mapping of the rehabilitation on an appropriate scale, definition of the area of direct social and environmental influence (ADEI).
 - b. Recommendation for siting of supporting infrastructure required for the works (asphalt plants, encampments, quarries, disposal areas, borrow pits and fills, fuel storage, and service roads, among others).
 - c. Recommendation of locations for dumps and storage of materials as well as maintenance facilities so that they will not become environmental problems by, for example, causing the damming and pollution of waterways, instability of natural slopes, and effects on flora and fauna.
 - d. Review of hydraulic and hydrological requirements for drainage and irrigation, considering at least 100 year return flood and rain episodes and definition of road grade and specifications of materials, compaction and protection to withstand these instances, taking into account potential modifications to the weather patterns due to climate change.
 - e. The design team and the consultant must also include specifications to ensure safe crossing conditions wherever needed and incorporate road safety measures.
- 6.5 **Stakeholder Consultation Process.** The Consultant must also implement the Stakeholder Consultation Process that fulfills the requirements of informing and engage

¹¹ Resettlement plan must comply with the Inter-American Development Bank's Operational Policy OP710 Involuntary Resettlement.

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.

- (i) **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 and disadvantage groups/subgroups whose needs are less likely to be taken into consideration under the usual planning scenarios. take in consideration the consultation requirements of local Agencies such as the Environmental Protection Agency.
- (ii) **Consultation Plan.** Prepare a Consultation Plan and communicate to stakeholders:
 - 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;
 - 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.
- (iii) **Implement the Consultation Plan.** Carry out the consultation plan employing a variety of methodologies to ensure proper coverage of the various stakeholder groups. Based on the nature and location of the Project, beyond the impacts listed previously particular attention should be given to the following concerns:
 - 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, 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.
 - 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.

(iv) ***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) ***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.

VII. TASK 3. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

7.1 An environmental and social management plan shall be drawn up to cover the prevention, mitigation, correction or compensation of all potential impacts identified in the previous stages, which shall include as a minimum:

- a) A corrective/prescribed program, a detailed description 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 its design requirements and procedures for its execution.
- b) A program for environmental follow-up or monitoring. Definition of the institutional responsibilities for implementation of each mitigation measures, including (i) operation, (ii) maintenance, (iii) control and supervision during construction and operation of the works, and (iv) environmental monitoring.
- c) A program for social compensation/expropriations.
- d) A resettlement program (if necessary).
- e) An investment program. A timetable and estimated budget for all investments and recurrent costs in implementation of the environmental management plan.
- f) A timetable of the activities, which must be synchronized with the activities for construction of the main components of the project.
- g) An information program to provide permanent and direct contact with all stakeholders and ensure their concerns are dealt with.

Each corrective and monitoring program must indicate who is responsible, who should review and ensure its implementation and the definition of necessary resources and budget.

The minimum expected components of the ESMP include:

- (i) Biological measures for soil erosion control and slope stabilization;
- (ii) Environmental measures for the maintenance of surface and ground water courses and the preservation of their quality and of aquatic fauna;
- (iii) Control of atmospheric emissions (dust and gases) and noise which affect the workers, neighbouring inhabitants, crops or the general environment;
- (iv) Measures to restore the areas impaired by the installation and operation of 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;
- (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, levelling, 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 levelling and other wastes, with due regard for the 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 and other installations to be affected by the widening of the road;
- (x) Measures for resettlement of the populations to be displaced by the highway.
- (xi) Identification of the costs and benefits of the mitigation and the environmental management plans in order to including them in the economic-environmental evaluation.
- (xii) Temporary route diversion plans to deal with congestion during construction as well as signalling and safety measures, wherever the existing road network or constructions might be affected.
- (xiii) Measures for final closure and restoration of affected sites (Campsites, quarries, etc)

- (xiv) A social management plan for construction crews and personnel involved in the project to ensure adequate behaviour towards the local population, adequate dealing of health related issues (AIDS and others), alcohol use, etc.
- (xv) A communications plan that will ensure transparency and effectiveness in dealing with the concerns or issues related to the interaction of the project (government, owners, contractors, etc) and the inhabitants of the area, and other important stakeholders.
- (xvi) A social/environmental awareness and training program for the contractors, the public and other important stakeholders.
- i. Identification of the costs and benefits of the mitigation and the environmental management plans in order to including them in the economic-environmental evaluation.
- ii. Measures for final closure and restoration of affected sites (Campsites, quarries, etc)
- iii. A social management plan for construction crews and personnel involved in the project to ensure adequate behaviour towards the local population, adequate dealing of health related issues (AIDS and others), alcohol use, etc.
- iv. A communications plan that will ensure transparency and effectiveness in dealing with the concerns or issues related to the interaction of the project (government, owners, contractors, etc) and the inhabitants of the area, and other important stakeholders.
- v. A social/environmental awareness and training program for the contractors, the public and other important stakeholders.

VIII. TASK 4. INSTITUTIONAL RECOMMENDATIONS.

- 8.1 Based on the findings of the prior studies, the Consultant will provide recommendations for the strengthening of institutions and other agencies involved in any capacity in the implementation of the ESMP and propose a communication, participation and stakeholder engagement program. In the Final Report, the Consultant will identify entities responsible for implementation as well as responsibilities and recommendations on best practice for the rehabilitation of the road with a particular emphasis to the extent relevant on the importance of taking into account ecosystem services flows and benefits when designing the future road rehabilitation operation.

IX. CONSULTANCY SPECIFICATIONS

Type of Consultancy. The consultancy will require the services of a consultancy firm with international and local experience in environmental and social impact assessments for road projects as well as in biodiversity and ecosystems. The consultancy firm must have the ability to mobilize in remote regions of Belize and must demonstrate antecedents of similar works in the region.

X. DURATION

This social and environmental impact study for the Rehabilitation of the Caracol Road in Belize shall be done in not more than **twenty six (26) weeks**. This period does not include the time for review, comments and approval of the draft final report by MoWT.

XI. REPORTS TO BE PRESENTED BY THE CONSULTANT

The Consultant will propose a **detailed outline, content and schedule** of completion of all working documents and reports of this project. All the reports will be in MS Word for text and Excel for spreadsheets. All reports and drawings will be presented in an electronic form and in three (3) hard copies of the report, two copies to GOB and one copy to the IDB. The minimum requirements are:

- **Inception Report.** The inception report should be submitted five weeks after commencement date of the contract, and shall include: initial findings incl. any comments on the TOR. Consultants detailed work schedule and methodology, and proposed outline for the final report, and design criteria to be employed.
- **The Environmental and Social Baseline Assessment** shall be presented within 10 weeks after contract signing;
- **The Environmental and Social Impact Assessment** shall be presented within 16 weeks after contract signing;
- **The Environmental and Social Management Plan** to be presented within 20 weeks after contract signing;
- **The draft Final Report** shall be presented within 23 weeks after the signing of the contract.
- **The Final Report** shall be presented no later than 26 weeks after the signing of the contract.

Payment Schedule (TBC)

Qualification and Experience

The Consultant's core study team shall consist of six experts:

Senior Natural Resource Management Specialist

- Education: University Degree in Natural Resource Management or Biodiversity (MSc or MA)
- Key specialization: Working in biodiversity inventory and ecosystem services respectively.
- Working experience: 12 years.

Environmental Assessment Specialist

- Education: University Degree in Environmental Studies or Engineering (MSc)
- Key specialization: Environmental assessment with substantial experience working on understanding and mitigating the impacts of major infrastructure projects.
- Working experience: 10 years.
- Developing countries experience: 5 years.

Social specialist

- Education: Minimum of Bachelor's Degree in Sociology or related field (BSc or BA)
- Key specialization: Infrastructural projects, Social Impact Assessments.

- Working experience: 10 years with at least 5 years in social impact assessment.
- Developing countries experience: 5 years

Civil Engineer

- Education: Minimum of Master's Degree in Engineering
- Key specialization: Infrastructural Projects, Drainage and Irrigation Projects.
This experience should include civil engineering with emphasis on drainage and irrigation.
- Working experience: 10 years.
- Developing countries experience: 5 years.

Geographical Information Systems Specialist

- Education: University Degree Geography or Computer Science (MSc)
- Key specialization: GIS mapping of biodiversity and ecosystems.
- Working experience: 10 years.
- Developing countries experience: 5 years.

The consultants must specify the qualifications and experience of each specialist to be assigned to the study. For each specialist proposed, curriculum vitae of no more than four pages in the bank's format should be provided setting out the relevant experience.

The core team should be supported by a team of field practitioners, from this region of Belize with experience in the environmental field, as well as in facilitating consultation processes with local communities.

All the experts should have a good command of English.

BELIZE PROJECT PREPARATION STUDIES FOR THE REHABILITATION OF THE CARACOL ROAD

SUPERVISION TERMS OF REFERENCE

1. INTRODUCTION

Belize is a small tropical country with a lightly spread population of 340,786. The country and its infrastructure, especially in the low lying coastal areas, are critically vulnerable to frequent tropical storms and hurricanes, flood damage and rising sea levels.

Belize's road network consists of 3,281 km of roads, of which 573 km are primary roads or highways, 765 km are secondary roads and 1,943 km are rural roads. Only 20% of the road network is paved. The existing network of roads and bridges is severely impacted by recurrent flooding. In recent decades tropical storms and hurricanes have recurrently affected the country. Impacts are likely to worsen due to increased rainfall and sea level rise associated with climate variability and climate change. Insufficient maintenance coupled with under designed road alignments are contributing to both high internal freight costs and to one of the highest road fatality rates in the Latin American region.

The Caracol Archeological Reserve, the largest known Maya archeological complex in Belize, along with other attractions such as the Mountain Pine Ridge and the Chiquibul Forest Reserve, are part of a tri national bioregion forming the largest remaining contiguous block of tropical broadleaf forest north of the amazon. These assets, which attribute the area with a tourism potential which until now has not been developed, can only be accessed through the Caracol road.

To reach the Caracol Archeological Reserve from the George Price Highway (GPH), there are two entryways, originating in Georgeville and Santa Elena, respectively, which converge into one road approximately 14 miles after Georgeville. By the route from Georgeville, it is about 46 miles (74 kilometers) from the GPH to the ruins of Caracol. The two hour rough ride to Caracol includes overall decent road conditions except for the approximately five miles around the Guacamallo Bridge, where the condition is poor and a problem year-round. The entire road is unpaved, except for the nine miles closest to Caracol which were upgraded 12 years ago to a paved surface (single layer chip seal). However, this paved section has not been maintained sufficiently and has notably deteriorated. By the route from Santa Elena, it is about 52 miles (82 kilometers) from the GPH.

The origins of roads in the region date back to the 1890's when, it is reported, hardwood logging took place in the Southern portion of the Chiquibul forest. In the early 1900's limited logging activity also occurred with coinciding increases in road building activity. However, it was not until after 1944 when laws were passed for the control and protection of the forest in the region, that work began on the Agustin Forest Station (renamed Douglas Da Silva Station in 1992) and an extensive network of roads began to be constructed.

The first modern road construction occurred in the 1950's with the construction of the Guacamallo Road leading to the Chiquibul Forest. Before the Caracol Archeological site could be properly linked with the Mountain Pine Ridge road, a large bridge was required over the upper reaches of the Macal River. This bridge, called the Guacamallo Bridge, was built in 1957 reportedly under the supervision of the FD.

The FD constructed the first official Caracol road in the early 1980's. The Forest Department Road Unit (FDRU) undertook further upgrading of the road from Guacamallo Bridge to Caracol Archeological Reserve in 1992, further improving access. A resurfacing was completed in April 1999 from San Antonio to Guacamallo Bridge and the Chiquibul Road was improved and compacted.

More recently, the Forestry Project funded by the Inter-American Development Bank (IDB), made important investments to improve the access to the Caracol Archeological Reserve. Its project sub-component Site & Access Improvement was for the completion of the final design and upgrading of the access road to Caracol, from both the Santa Elena and Georgeville junctions off the GPH. The plan also called for the paving of the road through the villages of Georgeville, Cristo Rey and San Antonio and to widen sections of the road as well as construct appropriate drainage throughout the length of the road. The final output was to be a first class rural road.

The aforementioned objectives were satisfactorily completed. All sections of the road were completed as per agreement with the paving of portions through the two major villages, the surface improvements, the widening in some areas, cutting back/down of hills/elevations, the straightening of sections of the road, the installation of culverts and drains and the erection of road guards in some critical areas. The most critical section of the road is from Caracol site to the junction with the Millenario Road spanning approximately 16 km. This area was virtually a mud rut trail passable only with four-wheel drive vehicles during dry weather. Under the consideration of the level of investment at Caracol and the long-term implications of an upgraded road, the decision was made that it would be more cost efficient and effective to have this section paved. The pavement of the road with line dividers, installation of culverts and drains and the erection of guardrails was completed in September 2004. The road segment between Cristo Rey and San Antonio (10 miles length) is now under construction.

The Belize Government has acknowledged that the tourism and agricultural sectors in the Chiquibul- Caracol Complex would benefit from updating the Caracol road. The rehabilitation of the Caracol road aims to: (i) promote economic growth by reducing transport costs for agricultural and timber production; (ii) improve access to the archeological site and other tourism attractions located along the transport corridor; and, (iii) contribute to the maintenance of ecosystem services associated with the road, including biodiversity, climate change mitigation and adaptation and disaster risk reduction.

2. OBJECTIVE OF THIS CONSULTANCY

The objective of this consultancy is to support the Government of Belize (GoBL), in the follow-up, evaluation and review of the reports submitted under the consultancies for the preparation of the feasibility studies and the procurement of a consultant to complete the final designs.

3. ACTIVITIES

The consultant will carry out the following activities:

- Act as a focal point for the coordination of works and results between the Technical Feasibility and Economic studies and the Environmental and Social Impact Assessment

- Follow-up the development of the studies through weekly meetings and fluent communication with the consultancy firms, making sure all activities are being developed according to the agreed working plan.
- Provide short weekly reports of outcomes of weekly meetings and to notify the MoWT of the project standing.
- Raise awareness about any potential lack of expected quality or delay of the reports submission as soon as possible.
- Review and prepare comments on all expected reports from the Technical Feasibility and Economic studies and the Environmental and Social Impact Assessment and verify that the comments have been adequately taken into account in the final version.
- Provide short reports to the MoWT summarizing findings (strengths, weaknesses, deficiencies) of all expected reports from the preliminary studies.
- Support the MoWT in the procurement process for the final design consultant.

4. CHARACTERISTICS OF THE CONSULTANCY

Type of consultancy: National Individual

Starting date and duration: The contract will have a duration from April 1, 2016 and December 31, 2017. The consultant is not expected to work full time during this period, only that to complete the tasks outlined above.

Place of work: Belize

Qualifications: Civil engineer with at least 10 years of experience in project preparation, economic/financial feasibility studies, roads geometric designs, drainage works. The consultant shall be able to communicate fluently in English.

Schedule of payment:

20% within 10 days of signing the contract

20% within 10 days of submitting comments to the Inception reports

30% within 10 days of completing submission of comments and reports on the Technical Feasibility Report, Economic Feasibility Report, the Environmental and Social Baseline Assessment, the Environmental and Social Impact Assessment, Public Consultation Guidelines, the Draft Final Report of the feasibility studies, the Environmental and Social Management Plan, and the Draft Final Report of the Environmental and Social Impact Study

20% within 10 days of submitting comments and a report on the Final Design Terms of Reference

10% within 10 days of submitting the evaluation of the Final Design Procurement process

5. DELIVERABLES

The consultant will prepare short reports with specific comments and recommendation for the Bank's non-objection to:

- The Inception Reports, Technical Feasibility Report, Economic Feasibility Report, the Environmental and Social Baseline Assessment, the Environmental and Social

Impact Assessment, Public Consultation Guidelines, the Draft Final Report of the feasibility studies, the Environmental and Social Management Plan, the Draft Final Report of the Environmental and Social Impact Study, and the Terms of Reference for the Final Designs. Any other additional intermediate report requested by the MoWT or the Bank will be subject of this kind of report.

- Weekly reports of project happenings. If there is nothing to report in a given week, then the consultant must submit a report stating so.
- An evaluation report of the Final Design Procurement Process

The reports will be in English.

6. SUPERVISION

The Consultant shall report to and be supervised by the Project Coordinator – MOWT who will be responsible for the supervision and technical evaluation of this consultancy. The following people will be responsible:

PROCUREMENT PLAN FOR NON-REIMBURSABLE TECHNICAL COOPERATIONS										
Country: Belize					Executing agency: Ministry of Works & Transport				Public or private sector: Public	
Project number: BL - T1072					Title of Project: Project Preparation Studies for the Rehabilitation of the Caracol Road					
Period covered by the plan: November 2015 to October 2017										
Threshold for ex-post review of procurements:				Goods and services (in US\$):		N/A		Consulting services(in US\$):		\$600,000
Item Nº	Ref. AWP	Description (1)	Estimated contract cost (US\$)	Procurement Method (2)	Review of procurement (3)	Source of financing and percentage		Estimated date of the procurement notice or start of the contract	Technical review by the PTL (4)	Comments
						IDB/MIF %	Local/other %			
		Goods								
		N/A								
		Non consulting services								
		N/A								
		Consulting services								
		Component 1 & 2								
1		Engineering Studies & Economic Feasibility Studies	350,000	QCBS	Ex ante	100%	0%	Dec-15	Oct-16	Components 1 & 2 will be hired under the same contract
		Component 3								
2		Social and Environmental Studies	200,000	QCBS	Ex ante	100%	0%	Dec-15	Oct-16	
		Individual Consultants								
		Component 4								
3		Project Supervision	50,000	QCNI	Ex ante	100%	0%	Mar-16	Oct-16	According to table 2 in the TC Document, the Counterpart will provide with additional US\$ 10,000 in-kind to support the supervision of Components 1, 2 & 3. Therefore that amount is not subject to any procurement process.
Total			600,000	Prepared by:			Date: October 2015			
(1) Grouping together of similar procurement is recommended, such as computer hardware, publications, travel, etc. If there are a number of similar individual contracts to be executed at different times, they 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 contract would be executed. For example: an export promotion project that includes travel to participate in fairs would have an item called "airfare for fairs", an estimated total value od US\$5,000, and an explanation in the Comments column: "This is for approximately four different airfares to participate in fairs in the region in years X and X1".										
(2) Goods and works: CB: Competitive bidding; PC: Price comparison; DC: Direct contracting.										
(2) Consulting firms: CQS: Selection Based on the Consultants' Qualifications; QCBS: Quality and cost-based selection; LCS: Least Cost Selection; FBS: Selection nder a Fixed Budget; SSS: Single Source Selection; QBS: Quality Based selection.										
(2) Individual consultants: IICQ: International Individual Consultant Selection Based on Qualifications; SSS: Single Source Selection.										
(2) Country system: include selection Method										
(3) Ex-ante/ex-post review: In general, depending on the institutional capacity and level of risk associated with the procurement, ex-post review is the standard modality. Ex-ante review can be specified for critical or complex process.										
(4) Technical review: The PTL will use this column to define those procurement he/she considers "critical"or "complex"that require ex ante review of the terms of reference, technical specifications, reports, outputs, or other items.										