

**CARIBBEAN DEVELOPMENT BANK**



**TECHNICAL ASSISTANCE – FEASIBILITY STUDY AND DETAILED DESIGNS  
CROOKED TREE ROAD AND CAUSEWAY UPGRADING – BELIZE**

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Considered at the Two Hundred and Seventy-First Meeting of  
the Board of Directors on May 16, 2016

**Paper BD 59/16**

**MAY 2016**

<i>Division Chief Economic Infrastructure Division</i>	<i>Andrew Dupigny</i>
<i>Senior Operations Officer, Engineer Economic Infrastructure Division</i>	<i>Glen McCarvell</i>

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**CARIBBEAN DEVELOPMENT BANK**

**TWO HUNDRED AND SEVENTY-FIRST MEETING OF THE BOARD OF DIRECTORS**

**TO BE HELD IN JAMAICA**

**MAY 16, 2016**

**PAPER BD 59/16**

**TECHNICAL ASSISTANCE – FEASIBILITY STUDY AND DETAILED DESIGNS**  
**CROOKED TREE ROAD AND CAUSEWAY UPGRADING – BELIZE**

**1. APPLICATION**

1.01 By letter dated March 31, 2015, the Government of Belize (GOBZ) through the Ministry of Finance and Economic Development, Petroleum, Investment, Trade and Commerce submitted a request for the Caribbean Development Bank (CDB) to assist in financing a feasibility study and the preparation of detailed designs to upgrade the Crooked Tree Road and Causeway to facilitate all weather access.

1.02 The beneficiary of this Technical Assistance (TA) Project will be GOBZ and the implementing agency will be the Ministry of Works and Transport and the National Emergency Management Organization (MWTN) through its Project Execution Unit (PEU).

1.03 The total cost of this Project is estimated at five hundred and five thousand United States dollars (USD505,000) of which CDB's contribution will be a loan not exceeding the equivalent of two hundred and fifty thousand United States dollars (USD250,000) and a grant not exceeding the equivalent of one hundred and fifty thousand United States dollars (USD150,000) from its Special Funds Resources (SFR) allocated from resources provided by the European Investment Bank (EIB) under the Grant Facility for Climate Action Support to CDB (EIB Grant). Counterpart funding, equivalent to one hundred and five United States dollars (USD105,000) will be met by GOBZ.

**2. BACKGROUND**

2.01 The country of Belize is the only official English-speaking country in Central America. With a population of 368,310<sup>1</sup> and an area of approximately 2.3 million hectares (ha), Belize has the lowest population density in Central America. The climate is tropical, very hot and humid, with a dry season running from February to May, a rainy season from May to November and a cool transitional period between November and February.

2.02 Belize's road network is divided into 603 km of arterial roads (mainly consisting of the Hummingbird, Southern, Philip S. W. Goldson and George Price Highways); 783 km of distributor roads; 2,160 km of feeder roads (also called Farm or Sugar Roads); and 970 km of village streets. Approximately 18% of the total network is paved, of which 65% is in good and 35% in fair condition. The road network includes a total of 313 bridges. Large sections of the road network are subject to flooding during the rainy season. This is as a result of the country's low lying topography together with inadequate maintenance and rehabilitation works, limited land use planning and insufficient drainage infrastructure. Moreover, until recently, road designs have not taken account of the increasing impacts of natural hazards and climate change variability, as well as road safety.

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<sup>1</sup> Statistical Institute of Belize's (SIB) estimate as of June 2015.

2.03 In 2013, GOBZ commenced the development of a National Climate Resilient Investment Plan, which included an assessment of the road network based on the socio-economic importance and flood risk. The assessment ranked the relative importance of specific links or nodes in the transportation network and their connectivity to socio-economic activities. The latter is particularly relevant for women who, reconciling productive and reproductive tasks, benefit from reduced time burden due to better transport infrastructure and will have more time available for productive activities. This contributes to a better usage of human capital in the country with positive effects on the economy. It also assessed connectivity during emergency evacuations and relief service provision, support in the movement of freight and access to socially- vulnerable populations. Based on that prioritisation exercise, the two highest priority roads<sup>2</sup> were identified for support under a World Bank-financed Climate Resilient Infrastructure Project. Sufficient funding under that project was not available to improve resilience for the community of Crooked Tree Village, the next highest priority identified.

2.04 Crooked Tree Village has a predominately Creole population of approximately 1,000<sup>3</sup> and is located in the north western quadrant of the Belize District on a low-lying island centred on a group of lagoons which are all linked to the Belize River, via Black Creek. The Village was originally founded as a logging camp in approximately 1750 and is one of the earliest inland European settlements in Belize. The Village is surrounded by the Crooked Tree Wildlife Sanctuary (CTWS)<sup>4</sup> (6,637 ha), which was declared a Ramsar site in 1998<sup>5</sup>. The Sanctuary is popular with birdwatchers and supports a small-scale ecotourism industry providing guides and accommodation. The Chau Hiix archaeological site located 30 minutes south of Crooked Tree Village, by motorboat, is also an important attraction for Visitors<sup>6</sup>. Other economic activities in the community include subsistence farming and fishing. The area is particularly well known for its cashew nuts, and primarily engages women and children in harvesting and processing them into wine, pastries, and condiments. Many men commute daily or leave the community altogether to seek permanent and seasonal employment in Belize City and Orange Walk.

2.05 The Village is connected to the Philip S. W. Goldson (PSWG) Highway (at Mile 33) by a 5.6 km long unpaved road and causeway across the lagoon<sup>7</sup>. The roadway has inadequate drainage and the causeway's only hydraulic openings are two single-lane bridge structures each having a 5.5 metre span. Prior to the causeway's construction in 1984, the Village was only accessible by boat. A second causeway was constructed in 2009 on the west side of the island, opening up additional agricultural lands in Black Burn on the mainland but also creating a possible source of pressure on CTWS's biodiversity. Neither of these causeways' designs was informed by an Environmental and Social Impact Assessment, nor by any hydrological analysis. Both restrict water flow in the lagoons and contribute to seasonal flooding. Also, when the Belize River floods, the lagoons act as an overflow basin and the silt deposited during these events contributes to the restriction of water flow out of the watershed and back into the river.

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<sup>2</sup> The number one priority road identified by the study was the section of road being upgraded, including the incorporation of climate adaption features, as part of the CDB-funded Fifth Road (PSWG Highway Upgrading) Project, BD35/14.

<sup>3</sup> The 2010 Census conducted by SIB indicated a population of 805 persons, 418 males and 387 females, in 224 households. Applying SIB's average population growth rate for the Rural Belize District of 4.6% p.a. would suggest that the population is now approximately 1,000.

<sup>4</sup> CTWS, the first Wildlife Sanctuary declared by GOBZ, was gazetted on December 8, 1984.

<sup>5</sup> The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. CTWS was declared Belize's first Ramsar site based on the wetland's significance, especially as a waterfowl habitat. Over 350 resident and migratory bird species have been recorded in the sanctuary. Thousands of birds are attracted to CTWS during the dry season, which overlaps with the peak tourist season of December to April.

<sup>6</sup> Considered medium-sized by Belize's Institute of Archaeology, the site contains 25 major Mayan structures including a 23-metre high central pyramid.

<sup>7</sup> Crooked Tree Road is classified as a distributor or secondary road.

2.06 Traffic on the road is light, however it provides a vital communication link for the community, as well as access for Visitors to CTWS and Chau Hiix and thus also facilitates significant economic benefits associated with tourism. A bus service links the community to Belize City, however, it is infrequent and many residents must rely on bicycles or walking to gain access to the more frequent public transport services on the PSWG Highway. A Map of Belize and of Crooked Tree are presented at Figures 1 and 2, respectively.

### **3. PROPOSAL**

3.01 It is proposed that CDB provide funds from its SFR of an amount not exceeding the equivalent of four hundred thousand United States dollars (USD400,000) (the Funds) comprising an amount not exceeding the equivalent of two hundred and fifty thousand United States dollars (USD250,000) by way of a loan (the Loan) and an amount not exceeding the equivalent of one hundred and fifty thousand United States dollars (USD150,000) allocated from resources provided by EIB under the EIB Grant, by way of a grant (the Grant), to assist GOBZ to engage the services of consultants to prepare a gender-sensitive feasibility study and detailed designs for the upgrading of Crooked Tree Road and Causeway to facilitate all-weather access to the community of Crooked Tree. It is also proposed that a vulnerability assessment of the Crooked Tree community be undertaken and mitigation measures identified to improve resilience to climate change. The proposed TA is consistent with:

- (a) CDB's Strategic Objective of supporting inclusive and sustainable growth and development within its Borrowing Member Countries;
- (b) CDB's Corporate Priority of strengthening and modernising social and economic infrastructure;
- (c) Special Development Fund 8 (SDF 8) themes of: Environmental Sustainability and Climate Change; and Gender Equality;
- (d) CDB's TA Policy and Operational Strategy of commitment to strengthening the synergies between TA operations and the Bank's investment lending;
- (e) CDB's Gender Policy and Operational Strategy; and
- (f) GOBZ's main transportation objectives which are: to improve access to services through the expansion of road infrastructure; and to integrate road safety, natural hazard resilience and climate change and variability considerations into road investment projects.

### **4. OUTCOME**

4.01 The outcome of this intervention is to establish technically viable solutions to improve community resilience and to establish all-weather access to the Crooked Tree Village, through the preparation of a gender-sensitive vulnerability assessment, a feasibility study and detailed designs. A Results and Monitoring Framework Matrix for the Project is included in Appendix 1.

## 5. JUSTIFICATION

5.01 Major cyclones (tropical depressions, tropical storms, or hurricanes) on average impact Belize once every three years<sup>8</sup>. More recently, the country has been impacted by high intensity rainfall events. The latest such event commenced in late October 2013, when Cayo, Stann Creek, Toledo, Belize and Orange Walk Districts were struck by a prolonged period of high intensity rainfall which resulted in severe flooding in these districts. Climate change projections suggest an increase in such events<sup>9</sup> which would heighten the risk of more frequent and non-seasonal flooding at Crooked Tree and inundation of the road and causeway. Currently, during the rainy season, between May and November each year, high water levels in the lagoon regularly overtop the causeway and portions of the road interrupting that link to the community. During significant or prolonged events, the Belize Coast Guard Service repositions patrol craft from the Caribbean Sea to the lagoon in order to maintain communications. All weather access is critical for residents to access employment, essential services, and education. It's also vital to facilitate access for Visitors, who provide significant contributions to the local economy, to CTWS and Chau Hiix. CTWS alone attracts approximately 1,700 Visitors each year<sup>10</sup>, the vast majority of these during the peak tourism season. CTWS is an important destination for birdwatchers, who comprise 10% of all Visitors to Belize<sup>11</sup>. With the causeway providing the only road transport connection to the main highway, the Village could become isolated more frequently during periods that historically were dry months and for longer periods. This represents significant health, welfare and livelihood risks to the residents.

5.02 During the most recent high intensity event the causeway was impassable for a 3-month period from late October 2013 to early February 2014. This extended period of flooding during the generally dry transitional period between the rainy and dry seasons resulted in considerable hardship for the community. Lack of access to the sanctuary meant local tourism operators had to completely suspend operations during the high season<sup>12</sup>. There were health impacts associated with the lack of access to health facilities for the chronically ill and an increase in skin ailments. As there is no secondary school in the community, students had to be ferried across the lagoon to connect with road transport to travel to their schools in either Ladyville or Belize City. On January 31, 2014, one of these students was killed and 9 others were seriously injured when 2 boats collided. The economic cost of that one event can be estimated at approximately USD1 million<sup>13</sup>.

5.03 The proposed TA intervention will assist MWTN in identifying the least cost option to upgrade the Crooked Tree Road and Causeway, and prepare detailed designs in order to facilitate the appraisal and financing of a capital project. It will also assist in identifying priority mitigation measures to improve overall community resilience.

5.04 Based on CDB's TA Performance Rating System, the Project has been assessed as highly satisfactory with a score of 3.5 (see Appendix 2). This suggests that it is likely to contribute to development effectiveness.

5.05 The Project is assessed as Gender Mainstreamed and has potential to contribute significantly to gender equality. Table 5.1 presents the Gender Marker for the Project and Appendix 3 shows the Gender Marker Analysis.

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<sup>8</sup> Belize National Meteorological Service.

<sup>9</sup> CARIBSAVE Climate Risk Profile for Belize, Summary Document, March 2012.

<sup>10</sup> Belize Tourism Board, Travel and Tourism Statistic Digest, 2012.

<sup>11</sup> Bird Tourism Market for Belize Factsheet, Center for Responsible Travel, 2015.

<sup>12</sup> Local operators include tour guides offering horse, bicycle, motorboat and canoe excursions; 3 lodges and 1 bed and breakfast providing a total of approximately 40 rooms. Their losses over that period, assuming a 50% occupancy rate, are estimated to total approximately USD250,000.

<sup>13</sup> Paper BD 44/12, Road Safety Project – Belize, Assumptions to the Economic Analysis, Economic value of death and serious injuries prevented.

**TABLE 5.1: GENDER MARKER**

<b>Analysis</b>	<b>Design</b>	<b>Implementation</b>	<b>M&amp;E</b>	<b>Score</b>	<b>Code</b>
1.0	1.0	0.5	0.5	<b>3.0</b>	GM <sup>14</sup>

**6. EXECUTION**

6.01 MWTN, through its PEU, will coordinate and oversee project implementation. It will be a condition precedent to first disbursement of the Loan that GOBZ assigns the administration and management of the Project to PEU. It will also be a condition precedent to first disbursement of the Loan that the Coordinator of PEU is assigned as Project Coordinator (PC) for the Project. CDB staff has reviewed PEU’s staffing arrangements, and current and projected workload, and are satisfied that it has the requisite capacity to manage the Project.

6.02 CDB’s resources will be utilised to meet the cost of consultancy fees, travel, per diems and local transportation. MWTN will manage the Project and provide geotechnical and topographical surveying services.

6.03 A consulting firm with expertise in road engineering, hydrology, climate change vulnerability, disaster risk management, environmental and social impact assessments, will be contracted to undertake the services. The Consultant’s Terms of Reference (TOR) are attached at Appendix 4. The consultancy has an estimated duration of eight calendar months. It is expected that the first disbursement of the Funds will be made by September 30, 2016. The Funds are expected to be fully disbursed by December 31, 2017.

**7. COST AND FINANCING**

7.01 The total cost of the Project is estimated at USD505,000 and is detailed in the Budget at Appendix 5. The summarised financing plan is set out in Table 7.1 below.

**TABLE 7.1: FINANCING PLAN FOR CONSULTANCY SERVICES**

<b>Contributors</b>	<b>USD</b>	<b>%</b>
CDB’s SFR Loan	250,000	49
CDB’s SFR Grant	150,000	30
MWTN	105,000	21
<b>Total</b>	<b>505,000</b>	<b>100</b>

7.02 CDB’s contribution of an amount not exceeding the equivalent of USD400,000 is eligible for financing from its SFR. Funds are available within existing resources. It is proposed that the Loan component be repayable in thirty-two (32) equal or approximately equal and consecutive quarterly instalments, commencing two (2) years after the date of the Loan Agreement. The interest rate is 2.5% per annum (p.a.) fixed.

7.03 In the event that GOBZ obtains financing from CDB for a project resulting from this TA, the amount of the Loan withdrawn and outstanding, together with the interest thereon, shall be payable from the proceeds of the first disbursement of such financing.

<sup>14</sup> GM – Gender Mainstreamed: the project has the potential to contribute significantly to gender equality.

**8. PROCUREMENT**

8.01 Consultancy services shall be procured in accordance with CDB's Guidelines for the Selection and Engagement of Consultants by Recipients of CDB Financing (October 2011), except that, to comply with the requirements of the EIB Grant, a waiver to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries is required. Further details of the procurement arrangements are provided in the Procurement Plan presented at Appendix 6.

**9. REPORTING REQUIREMENTS**

9.01 The PC will be required to submit to CDB the Consultant's Reports required by the TOR.

**10. RISK ASSESSMENT AND MITIGATION**

10.01 Some risks have been identified which could have an effect on the implementation and operation of the Project. The risks have been classified as financial and operational and a summary of the risks and mitigation measures is presented in Table 10.01.

**TABLE 10.1: RISK ASSESSMENT AND MITIGATION**

<b>Risk Type</b>	<b>Description of Risk</b>	<b>Mitigation Measures</b>
Implementation	Unavailability or inadequacy of Counterpart Funding Resources.	GOBZ remains committed to the funding of PEU which continues to manage a portfolio of GOBZ's donor funded projects with anticipated completion dates up to 2018.

**11. RECOMMENDATION**

11.01 It is recommended that CDB approve the provision of funds to GOBZ from CDB's SFR of an amount not exceeding the equivalent of four hundred thousand United States dollars USD400,000 (the Funds) comprising:

- (a) an amount not exceeding the equivalent of two hundred and fifty thousand United States dollars (USD250,000) by way of loan (the Loan); and
- (b) an amount not exceeding the equivalent of one hundred and fifty thousand United States dollars (USD150,000), allocated from resources provided by EIB under the EIB Grant, by way of grant (the Grant),

to assist GOBZ in financing consultancy services to undertake a feasibility study and the preparation of detailed designs for the upgrading of Crooked Tree Road and Causeway in accordance with the TOR set out in Appendix 4 (the Project), on CDB's standard terms and conditions and on the following terms and conditions:

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.



- (1) Repayment:
  - (a) Repayment of the Loan shall be made in thirty-two (32) equal or approximately equal and consecutive quarterly instalments commencing two (2) years after the date of the Loan Agreement.
  - (b) If GOBZ obtains financing from CDB or other sources for a project or programme resulting from the Project, the amount of the Loan withdrawn and outstanding, together with the interest thereon, shall be payable in one payment from the proceeds of the first disbursement of such financing, if such payment is compatible with the operating policy of the source of such financing.
- (2) Interest: Interest shall be payable quarterly at the rate of two decimal five percent (2.5%) p.a. on the amount of the Loan withdrawn and outstanding from time to time.
- (3) Disbursement:
  - (a) The first disbursement of the Funds shall be made by September 30, 2016 and the Funds shall be fully disbursed by December 31, 2017, or such later dates as CDB may specify in writing.
  - (b) Except as CDB may otherwise agree:
    - (i) the Funds shall be used to meet the cost of the items allocated for financing by CDB as shown in the budget for the Project set out at Appendix 5 (the Budget) up to the respective limits specified therein;
    - (ii) each disbursement of the Funds shall be made rateably from the Loan and the Grant in proportion to the amounts thereof; and
    - (iii) total disbursements shall not exceed in the aggregate seventy-nine per cent (79%) of the cost of the Project.
  - (c) CDB shall not be under any obligation to make payments exceeding the equivalent of three hundred and sixty thousand United States dollars (USD360,000) or ninety percent (90%) of the amount of the Funds until CDB shall have received:
    - (i) the requisite number of copies of the final report or other deliverables, in form and substance acceptable to CDB, to be furnished by the consultant(s) in accordance with the TOR at Appendix 4; and
    - (ii) a certified statement of the expenditures incurred by GOBZ in respect of and in connection with the Project.
  - (d) The Loan shall not be used to finance, directly or indirectly, any part of the cost of the Project which consists of identifiable taxes or duties.

(4) Procurement:

- (a) Except as provided in sub-paragraph (b) below, procurement shall be in accordance with the procedures set out and/or referred to in the Agreements between CDB and GOBZ providing for the Funds, or such other procedures as CDB may from time to time specify in writing.
- (b) In respect of procurement related to the Project, country eligibility shall be extended to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.
- (c) The Procurement Plan approved by CDB is set out at Appendix 6. Any revisions to the Procurement Plan shall require CDB's prior approval in writing.

(5) Conditions Precedent to First Disbursement: GOBZ shall have:

- (a) assigned the administration and management of the Project to PEU of MWTN in accordance with sub-paragraph 6(b)(iv); and
- (b) assigned the Coordinator of PEU as PC for the Project in accordance with sub-paragraph 6(b)(v).

(6) Other Conditions:

- (a) Except as CDB may otherwise agree, GOBZ shall implement the Project through PEU of MWTN.
- (b) GOBZ shall:
  - (i) contribute to the Project an amount of not less than the equivalent of two hundred and ten thousand Belize dollars (BZD210,000) which shall be expended in a timely manner on the components of the Project designated for financing by GOBZ as shown in the Budget, unless CDB shall otherwise specify in writing;
  - (ii) carry out the Project at all times with due diligence and efficiency, with management personnel whose qualifications and experience are acceptable to CDB, and in accordance with sound technical, environmental, financial and managerial standards and practices;
  - (iii) institute and maintain organisational, administrative, accounting and auditing arrangements acceptable to CDB;
  - (iv) assign the administration and management of the Project to PEU of MWTN, which shall be responsible for coordinating and overseeing project implementation;
  - (v) assign the Coordinator of PEU as PC for the Project. The qualifications and experience of any person subsequently assigned as PC for the Project shall be acceptable to CDB;

- (vi) in accordance with the procurement procedures applicable to the Funds, select and engage consultant(s) to carry out the services set out in the TOR at Appendix 4;
  - (vii) except as CDB may otherwise agree, furnish or cause to be furnished to CDB, the reports to be provided by the consultant(s) in accordance with the TOR at Appendix 4, in the forms specified or in such form or forms as CDB may require, not later than the times/periods specified therein for so doing;
  - (viii) ensure that each deliverable produced by the consultant(s) under the Project contains the following statements:

“This technical assistance operation is financed under the second envelope of the Cotonou Agreement.”

and

“The authors take full responsibility for the content of this report. The opinions expressed do not necessarily reflect the view of the European Investment Bank.”;
  - (ix) facilitate and permit any authorised representative of CDB or EIB to communicate with and if necessary visit the Consultant under the Project in order to obtain all such information as CDB and EIB may require with regard to the progress of the Project; and
  - (x) permit CDB and EIB, or any person appointed thereby, to audit the expenditures financed by the Grant and their eligibility prior to or after the relevant payments, and to provide CDB and EIB, or the appointed person with all reasonably required assistance, documents and information.
- (c) GOBZ acknowledges that CDB may be obliged to divulge such documents relating to the Project and the consultant(s) to any competent European Union institution or body in accordance with the relevant mandatory provisions of European Union law.
- (d) Except as CDB may otherwise agree, GOBZ shall:
- (i) meet or cause to be met:
    - (aa) the cost of the items designated for financing by GOBZ in the Budget;
    - (bb) any amount by which the cost of the Project exceeds the estimated cost set out in the Budget; and
    - (cc) the cost of any other items needed for the purpose of, or in connection with, the Project; and
  - (ii) provide or cause to be provided, all other inputs required for the punctual and efficient carrying out of the Project not being financed by CDB

- (e) CDB shall be entitled to suspend, cancel or require a refund of the Grant or any part thereof if:
  - (i) the Loan or any part thereof is suspended, cancelled or called in; or
  - (ii) the EIB Grant or any part thereof is suspended, cancelled or required to be refunded,

except that GOBZ shall not be required to refund any amount of the Grant already expended in connection with the Project and not recoverable by GOBZ.

**SUPPORTING DOCUMENTATION**

- Appendix 1: Results and Monitoring Framework Matrix
- Appendix 2: Performance Rating System
- Appendix 3: Gender Marker Analysis
- Appendix 4: Draft Terms of Reference – Consultancy Services for the Preparation of a Gender-Sensitive Feasibility Study and Detailed Designs for the Upgrading of Crooked Tree Road and Causeway
- Appendix 5: Budget
- Appendix 6: Procurement Plan
- Figure 1: Map of Belize
- Figure 2: Map of Crooked Tree

## RESULTS AND MONITORING FRAMEWORK MATRIX

Narrative Summary	Indicators	Means of Verification	Assumptions
<p><b>1. IMPACT:</b></p> <p>A capital project which will contribute to improved livelihoods and resilience to climate change for Crooked Tree community.</p>	Capital project approved by May 2018.	Signed Loan Agreement with lending agency.	Stable macro-economic environment which facilitates GOSL borrowing.
<p><b>2. OUTCOME:</b></p> <p>To enhance the capacity of GOBZ to prepare a technically and economically feasible capital project, that will result in improved community resilience and all-weather access to Crooked Tree.</p>	A technically and economically viable project proposal by December 31, 2017.	Project Appraisal Report.	<p>1. Financing for the capital project is available.</p> <p>2. GOBZ priorities remain unaltered.</p>
<p><b>3. OUTPUTS:</b></p> <p>Recommendations for improving community resilience and upgrading Crooked Tree Road and Causeway provided and costed.</p>	<p>1. Gender-sensitive Feasibility Study Report accepted by GOBZ, MWTN and CDB by June 2017.</p> <p>2. Detailed Design Report accepted by GOBZ, MWTN and CDB by December 2017.</p>	<p>1. Consultant's Reports.</p> <p>2. PC reports.</p> <p>3. CDB Supervision Reports.</p>	Recommendations of the consultants accepted by GOBZ/MWTN and other stakeholders.
<p><b>4. ACTIVITIES/INPUTS</b></p>	<b>\$'000</b>		
<b>Item</b>	<b>CDB</b>	<b>GOBZ</b>	<b>Total</b>
<p>1. Engineering Services</p> <p>2. Surveying and Geotechnical Investigations and Project Management and Contingencies</p>	400	105	505
<b>Total Project Cost</b>	<b>400</b>	<b>105</b>	<b>505</b>
		<p>1. Consultants selected and engaged.</p> <p>2. CDB disbursement records.</p>	GOBZ/MWTN counterpart contribution.

**PERFORMANCE RATING SYSTEM**

<b>Criteria</b>	<b>Score</b>	<b>Justification</b>
Relevance	4	GOBZ is committed to increasing the resiliency of the Crooked Tree Community to natural hazards and climate vulnerability. The proposed consultancy examines the viability of options towards this objective. It is consistent with CDB's Strategic and Corporate Objectives, and SDF 8 Themes.
Efficacy	4	The proposed consultancy will address engineering, economic, social, environmental and disaster risk reduction, and climate resilience considerations.
Efficiency	4	The expected cost of the consultancy has been based on current professional rates, and given the expected level of capital investment, is considered reasonable.
Sustainability	3	Using a participatory approach will contribute to obtaining relevant stakeholder feedback to develop mitigation strategies that will be owned by the community.
<b>Overall Score</b>	<b>3.5</b>	<b>Highly Satisfactory.</b>

**GENDER MARKER ANALYSIS**

<b>Project Cycle Stage</b>	<b>Criteria</b>	<b>Score</b>
<b>Analysis: Introduction/ Background/ Preparation</b>	Consultations with women/girls/men/boys and relevant gender-related or sector-related public or private organisations have taken place.	0.50
	Social analysis identifies gender issues and priorities.	0.25
	Macroeconomic analysis identifies gender issues and priorities.	0.25
<b>Design: Project Proposal/ Definition/ Objective/ Description</b>	To address the needs of women/girls and men/boys concrete interventions to reduce existing gender disparities have been designed. Effect on project outcome is direct.	0.50
	Project objective / outcome includes gender equality.	0.50
<b>Implementation: Execution</b>	TOR of project coordinating unit / project management unit include responsibilities of gender mainstreaming, especially at the levels of the project coordinator/director.	0.50
<b>Monitoring and Evaluation: Results- Monitoring- Framework (RMF)</b>	At least one gender-specific indicator at the outcome and/or output level in the RMF.	0.50
<b>Maximum Score:</b>		<b>3.0</b>

**Gender Mainstreamed (GM):** The project has the potential to contribute significantly to gender equality.

**DRAFT TERMS OF REFERENCE<sup>1</sup>**

**CONSULTANCY SERVICES FOR THE PREPARATION OF A GENDER-SENSITIVE  
FEASIBILITY STUDY AND DETAILED DESIGNS FOR THE UPGRADING OF  
CROOKED TREE ROAD AND CAUSEWAY**

**1. BACKGROUND**

1.01 The country of Belize is the only official English-speaking country in Central America. With a population of 368,310<sup>2</sup> and an area of approximately 2.3 million hectares (ha), Belize has the lowest population density in Central America. The climate is tropical, very hot and humid, with a dry season running from February to May, a rainy season from May to November and a cool transitional period between November and February.

1.02 Belize's road network is divided into 603 km of arterial roads (mainly consisting of the Hummingbird, Southern, Philip S. W. Goldson and George Price Highways); 783 km of distributor roads; 2,160 km of feeder roads (also called Farm or Sugar Roads); and 970 km of village streets. Approximately 18% of the total network is paved, of which 65% is in good and 35% in fair condition. The road network includes a total of 313 bridges. Large sections of the road network are subject to flooding during the rainy season. This is a result of the country's low lying topography together with inadequate maintenance and rehabilitation works, limited land use planning and insufficient drainage infrastructure. Moreover, road designs have not taken account of the increasing impacts of natural hazards and climate change variability, as well as road safety.

1.03 In 2013, the Government of Belize (GOBZ) commenced the development of a National Climate Resilient Investment Plan, which included an assessment of the road network based on socio-economic importance and flood risk. The assessment ranked the relative importance of specific links or nodes in the transportation network and their connectivity to socio-economic activities. It also assessed connectivity during emergency evacuations and relief service provision, support in the movement of freight and access to socially vulnerable populations. Based on that prioritisation exercise, the two highest priority roads<sup>3</sup> were identified for support under a World Bank-financed Climate Resilient Infrastructure Project. Sufficient funding under that project was not available to improve resilience for the community of Crooked Tree Village, the third highest priority identified.

1.04 Crooked Tree Village has a predominately Creole population of approximately 1,000<sup>4</sup> and is located in the north western quadrant of Belize District on a low-lying island centred on a group of lagoons which are all linked to the Belize River, via Black Creek. The village was originally founded as a logging camp in approximately 1750 and is one of the earliest inland European settlements in Belize. The village is

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<sup>1</sup> Prior to finalising, these draft Terms of Reference (TOR) must be submitted for the review and approval of the Department of the Environment. Final TOR should be submitted to CDB for its no objection.

<sup>2</sup> Statistical Institute of Belize's (SIB) estimate as of June 2015.

<sup>3</sup> The number one priority road identified by the study was actually the section of road being upgraded, including the incorporation of climate adaption features, as part of the Caribbean Development Bank-funded Fifth Road (Philip S. W. Goldson Highway Upgrading) Project.

<sup>4</sup> The 2010 Census conducted by SIB indicated a population of 805 persons, 418 males and 387 females in 224 households. Applying SIB's average population growth rate for Rural Belize District of 4.6% per annum would suggest that the population is now approximately 1,000.



surrounded by the Crooked Tree Wildlife Sanctuary (CTWS)<sup>5</sup> (6,637 ha), which was declared a Ramsar site in 1998<sup>6</sup>.

1.05 The sanctuary is popular with birdwatchers and supports a small-scale ecotourism industry providing guides and accommodation. The Chau Hiix archaeological site located 30 minutes south of Crooked Tree Village by motorboat is also an important attraction for Visitors<sup>7</sup>. Other economic activities in the community include subsistence farming and fishing. The area is particularly well known for its cashew nuts, and primarily engages women and children in harvesting and processing them into wine, pastries, and condiments. Many men commute daily or leave the community altogether to seek permanent and seasonal employment in Belize City and Orange Walk.

1.06 The village is connected to the Philip S. W. Goldson (PSWG) Highway (at Mile 33) by a 5.6 km long unpaved road and causeway across the lagoon<sup>8</sup>. The roadway has inadequate drainage and the causeway's only hydraulic openings are two single-lane bridge structures each having a 5.5 metre span. Prior to the causeway's construction in 1984 the village was only accessible by boat. A second causeway was constructed in 2009 on the west side of the island, opening up additional agricultural lands in Black Burn on the mainland but also creating a possible source of pressure on CTWS's biodiversity. Neither of these causeways' designs were informed by an Environmental and Social Impact Assessment (ESIA), nor by any hydrological analysis. Both restrict water flow in the lagoons and contribute to seasonal flooding. Also, when the Belize River floods, the lagoons act as an overflow basin and the silt deposited during these events contributes to the restriction of water flow out of the watershed and back into the river. Traffic on the road is light, however it provides a vital communication link for the community, as well as access for Visitors to CTWS and Chau Hiix and thus facilitates significant economic benefits associated with tourism. A bus service links the community to Belize City, however it is infrequent and many residents often rely on bicycles or walking to gain access to public transport services on the PSWG Highway.

1.07 Major cyclones (tropical depressions, tropical storms, or hurricanes) on average impact the country once every three years. More recently, the country has been impacted by high intensity rainfall events. The latest such event commenced in late October 2013, when Cayo, Stann Creek, Toledo, Belize and Orange Walk Districts were struck by a prolonged period of high intensity rainfall which resulted in severe flooding in these districts. Climate change projections suggest an increase in the intensity of such events which would heighten the risk of more frequent flooding at Crooked Tree and inundation of the causeway. Currently, during the rainy season between June and November each year high water levels in the lagoon regularly overtop the causeway and interrupt the road link to the community. During significant or prolonged events the Belize Coast Guard Service repositions patrol craft from the Caribbean Sea to the lagoon in order to maintain communications. All weather access is essential for residents to access employment; essential services; and education. It's also vital to facilitate access for visitors to CTWS who provide significant contributions to the local economy. With the causeway being the only road transport

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<sup>5</sup> CTWS, the first Wildlife Sanctuary declared by the Government of Belize, was gazetted on December 8, 1984.

<sup>6</sup> The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. CTWS was declared Belize's first Ramsar site based on the wetland's significance, especially as a waterfowl habitat. Over 350 resident and migratory bird species have been recorded in the sanctuary. Thousands of birds are attracted to CTWS during the dry season, which overlaps with the peak tourist season of December to April.

<sup>7</sup> Considered medium-sized by Belize's Institute of Archaeology, the site contains 25 major Mayan structures including a 23-metre high central pyramid.

<sup>8</sup> The Road is classified as a distributor or secondary road.

connection to the main highway the village could become isolated more frequently and for longer periods. This represents significant health, welfare and livelihood risks to the residents.

## **2. OBJECTIVE**

2.01 The objective of this technical assistance is to conduct: (a) a gender-sensitive feasibility study and prepare preliminary and detailed designs to upgrade the Crooked Tree Road and Causeway incorporating climate change considerations; and (b) prepare a preliminary gender-sensitive adaptation plan of action for the community of Crooked Tree. This will be achieved through the identification of multi-dimensional vulnerabilities, assessment of hydrological and hydraulic conditions, mapping of the community's risk to flooding, identification of least-cost civil works, and the preparation of detailed designs to facilitate all-weather access to the community.

## **3. SCOPE OF WORK**

3.01 The scope of services includes, but is not limited to:

### **(a) Site Characterisation and Data Collection:**

- (i) Researching, collecting and analysing existing historic topographic, land use, hydrological, meteorological, geological, aerial imagery, and hazard event data and studies to characterise the catchment area and site conditions.
- (ii) Determine traffic volumes on the road and causeway.
- (iii) Principal hydraulic attributes of the watershed should be defined.
- (iv) Site characterisation to include mapping of critical infrastructure and key land uses and economic activities.
- (v) Site visits and field data collection, for new data collection and for validation of existing topographic information, as required, to inform the subsequent phases of this assessment; and
- (vi) Consulting with the Crooked Tree Village, their representatives and any other relevant key informants regarding their observations during previous flooding events, regarding their perspectives and areas impacted. The consultant is expected to document perceived trends in climate and its consequences.

### **(b) Stakeholder Consultations:**

- (i) Conducting consultative and differentially- participatory stakeholder meetings at appropriate points of the Project with primary and secondary stakeholders including *inter alia*, community leaders, community groups, residents, ministerial departments and agencies. A culturally-appropriate, gender-sensitive Social Engagement Plan (SEP) will be developed and implemented by the consultants, in collaboration with key stakeholders and approved by GOBZ and CDB to facilitate participation and strengthen buy-in for the Project. The SEP will be designed to:

- (aa) Promote an enabling and supportive environment for the Project.
  - (bb) Understand stakeholders', in particular the differential perspectives of women and men, concerns, perceived current needs and priorities in terms of future vulnerability reduction.
  - (cc) Identify Project risks.
  - (dd) Facilitate two-way information sharing.
  - (ee) Enhance public understanding of the Project.
  - (ff) Set realistic stakeholder expectations of intended outcomes.
  - (gg) Receive stakeholders' input to and feedback on proposed designs and implementation methodologies.
  - (hh) Support a grievance redress mechanism.
- (c) **Climate Vulnerability Assessment, Hydraulic and Flood Risk Modelling:** The objective of the Climate Vulnerability Assessment is to identify and evaluate the potential effects of climate change on CTWS, the road, causeway and on the community (see Section (d) below), and to identify resilience measures to address the identified vulnerabilities. The consultant should undertake a quantitative analysis that includes the following:
- (i) Characterisation of relevant climate variables and establishment of climate baseline. The consultant is expected to apply hydrologic tools to describe the behaviour of the lagoons, Black Creek and the Belize River, and assess the existing and future vulnerability of Crooked Tree and surrounding areas. The consultant will also define the hydraulic and hydrologic variables for road design, based on expected climate conditions by mid-century. Mid-century climate change scenarios should be used to define road and hydraulic structure design parameters. Climate variables could include temperature and precipitation changes (and for design purposes maximum 24-hour daily precipitation could be used as the basis for assessing the risk of floods from surface runoff); incidence of hurricanes and tropical storms. Both historical data and future scenarios will be required. The consultant will be expected to provide advice on the appropriate recurrence intervals for meteorological events impacting the proposed design of the infrastructure. It is recommended that the consultant begin with a consultation with stakeholders to obtain their historical knowledge of past events and responses.
  - (ii) Considering and factoring available historic precipitation data, climate model forecasts and scenarios assessed above, catchment surface area, topography, soil conditions, and hydrology of the watershed, develop and/or apply relevant hydraulic/hydrologic models to characterise the hydraulics of the lagoon system and its outflow. Investigate options to improve the drainage characteristics of the watershed. Develop hydraulic and roadway design options for the upgrading of the

causeway and the road between Crooked Tree and the PSWG Highway based on the climate change scenarios identified above, including various storm event scenarios (1-in-10, 50, 100 and 150-year events). The Consultant shall also make recommendations for improving the hydraulics of the second causeway on the west side of the island.

- (iii) Using the predicted water levels and other criteria developed at (i) above, prepare a simple flood vulnerability map for Crooked Tree Village and for the roadway, at minimum 1:5000 scale, or of a useful size relative to the study catchment, as determined with the Ministry of Works and Transport (MWTN) and end-users, showing projected water levels for mid-century (2050) expected climate conditions identified above (and for return periods of 1-in-10, 50, 100 and 150-year flood events), current development activities, critical infrastructure and population at risk in the flood zones.
- (iv) Using this analysis, identify key vulnerable hotspots and potential climate adaptation measures. The consultant will prioritise the identified adaptation measures, conducting an economic analysis of each technically feasible option, showing the costs and benefits, or a cost-effectiveness analysis if the measures are expected to deliver the same benefits.
- (v) The consultant will make an assessment of the adaptive capacity of MWTN responsible for overseeing roads construction and maintenance; i.e., their ability to plan and implement the climate resilient measures that may be identified.

**(d) Community Vulnerability Assessment:**

- (i) Produce a sex-disaggregated demographic profile of households in Crooked Tree including socio-economic, individual and community characteristics.
- (ii) Identify key employers and livelihood activities of men and women in the community.
- (iii) Identify risks and vulnerabilities, including those linked to projected climate change, in the following areas including *inter alia*: housing; economic activities; employment opportunities; livelihoods; labour force participation; shelter management; natural hazards; security and violence (including gender-based); education; health; transportation; and water, sanitation, and drainage.
- (iv) Investigate gender-specific risks and vulnerabilities and gender-specific coping mechanisms, including those linked to projected climate change.
- (v) Prioritise community risks and vulnerabilities and community priorities for potential investments. Include men and women equally in public consultations, as well as key primary and secondary stakeholders and various group representatives.
- (vi) Develop a gender-sensitive adaptation plan to address the main issues identified by key stakeholders and priority interventions. The Plan should include timelines

for implementation of activities and stakeholders' responsibilities during implementation. Contingency plans (how to respond during extreme events) should be discussed with the community for the most relevant climate related risks (floods, droughts and heat waves, if appropriate).

**(e) Preliminary Design:**

- (i) Based on hydraulic modelling, taking account of potential climate change impacts, and in consultation with MWTN, recommend optimal options for upgrading the road and causeway between Crooked Tree and the PSWG Highway and for improving flood resilience of the community. The Consultant must also demonstrate how climate change risk and associated capital costs considerations have altered the proposed design (i.e. the specific changes in design in order to take account of climate change).
- (ii) Preparing cost and quantity estimates for MWTN agreed preferred design. The Consultant should also perform a least-cost analysis and consult with MWTN to determine the event horizon.

**(f) Environmental and Social Impact Assessment:** Conducting an ESIA of the proposed works. The ESIA should involve broad stakeholder consultation and proposed areas of participation by residents and other stakeholders during the implementation. It should also include:

- (i) description of the existing social and environmental conditions relevant to the Project. This should include baseline demographic information;
- (ii) analysis of both qualitative and quantitative socio-economic benefits;
- (iii) identify opportunities for environmental enhancements for the village and CTWS;
- (iv) analysis of direct and indirect social and environmental impacts and risks. Potential risks should be identified during implementation and operation; and
- (v) preparation of an Environmental and Social Management Plan including recommended mitigation measures, stakeholder engagement plan and grievance mechanisms.

**(g) Preparation of Detailed Designs:**

- (i) Based on the MWTN agreed preferred option, prepare detailed designs for the works. The scope of work shall include, but not be limited to, the following main activities:
  - (aa) developing design criteria details for the carriageway, hydraulic and structural elements;
  - (bb) obtaining subsurface soils information;

- (cc) preparing designs of works to be incorporated into the Project;
- (dd) designs should incorporate safety considerations of vulnerable road users (pedestrians, bicyclists, and motorcyclists) and security features along the road and at bus shelters.
- (ee) environmental, social and natural hazard management parameters, which are to be defined during the engineering studies, shall be highlighted, identified and incorporated into the final designs;
- (ff) preparing construction specifications for all the works shown on the drawings for which the Consultant is responsible. The specifications shall be clear and concise with a statement setting forth the general scope of work, followed by a description of the various classes of work, segregated by trade and under appropriate sections and headings. The quality of the materials and workmanship required of the contractor or supplier, will be described in detail;
- (gg) contract documents will be prepared in accordance with the Caribbean Development Bank's (CDB) standard bidding documents, including: performance and maintenance bond forms; form of tender; schedule of quantities; articles of agreement; general conditions of the contract; and any special conditions that may be required;
- (hh) providing the client with a pre-tender engineer's cost estimate based on the final design. This should indicate the anticipated division between local and foreign costs; and
- (ii) submitting the plans and specifications, for approval to the client and the appropriate authorities, as required. Attend meetings at the offices of GOBZ and authorities to discuss the designs and provide explanations for the purpose of furthering approvals.

#### **4. IMPLEMENTATION ARRANGEMENTS**

4.01 MWTN will appoint a Project Coordinator (PC). PC will facilitate the work of the consultants and make available all studies, reports and data relevant to the completion of the exercise and will act as liaison between the consultants and GOBZ officials and stakeholders. PC will also ensure the incorporation of gender inputs at appropriate stages during project implementation.

#### **5. QUALIFICATIONS AND EXPERIENCE**

5.01 The consulting team should consist of persons having relevant experience in the areas of environmental engineering/civil engineering, drainage and/or hydraulic engineering, hydraulic modelling, hydrology, community consultation and environmental and social impact assessment including experience in gender analysis, climate change vulnerability assessment, and disaster risk management. Specific experience in Caribbean will be an asset.

**6. REPORTING ARRANGEMENTS/OUTPUTS**

6.01 The Consultant will be required to submit the following number of reports to GOBZ and CDB, respectively, within the time periods indicated:

- (a) Inception Report: the report should describing the approaches proposed to be taken to prepare and deliver the scope of works outlined, within one month of the start of the consultancy.
- (b) Community Vulnerability Assessment Report: the draft report should be submitted within three months of the start of the consultancy. It should provide an adaptation plan to address the main issues identified by key stakeholders and priority interventions.
- (c) Climate Vulnerability Assessment, Hydraulic and Flood Risk Modelling Report: the draft report should be submitted within four months of the start of the consultancy. It should include the site characterisation, climate change scenarios, flood risk modelling, mapping and the vulnerability analysis. It should include an analysis of options to improve the drainage characteristics of the watershed and of hydraulic and roadway design options for the upgrading of the causeway and the road based on various event scenarios.
- (d) Design Report: the draft preliminary design report should consist of a preliminary design, cost and quantity estimates for the preferred option and should be submitted within six months of the start of the consultancy. The Final Design Report should be submitted within eight months of the start of the consultancy and consist of agreed detailed designs, revised cost and quantity estimates and bidding documents.
- (e) ESIA Report: the draft report should be submitted within six months of the start of the consultancy.

6.02 Comments on the Reports should be anticipated within two weeks of receipt and the Consultant(s) will adjust the ongoing work according to the comments received. The Consultants will revise the draft reports within one month of receipt and in accordance with the comments received. Reports should be submitted in three hard copies and electronically.

**7. DURATION**

7.01 The Consultancy is to be implemented over a period of 8 months.

**8. COMMENTS BY THE CONSULTANTS**

8.01 The Consultants are requested to make comments on, and suggestions for, improvements to these Terms of Reference.

**APPENDIX 6**

**BUDGET**  
**(USD)**

<b>Items</b>	<b>CDB</b>	<b>GOBZ</b>	<b>Total</b>
Consultant Services	400,000	105,000	505,000
Project Management, Surveys and Investigation			
Contingencies			
<b>Total</b>	<b>400,000</b>	<b>105,000</b>	<b>505,000</b>
<b>Percentage</b>	<b>79</b>	<b>21</b>	<b>100</b>



**PROCUREMENT PLAN**

**I. General**

**1. Project Information:**

Country: Belize

Grantee: GOBZ

Project Name: Technical Assistance – Feasibility Study and Detailed Designs –  
Crooked Tree Road and Causeway Upgrading

Project Executing Agency: MWTN, PEU

**2. Bank's Approval Date of the Procurement Plan:** May 16, 2016

**3. Period Covered by this Procurement Plan:** May 2016 – November 2017

**II. Consulting Services**

**1. Reference to (if any) Project Operational/Procurement Manual:** For consulting services, CDB's Guidelines for the Selection and Engagement of Consultants (2011).

**2. Any Other Special Procurement Arrangements:** To comply with the requirements of the EIB Finance Agreement, a waiver to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB member countries is required.

**Procurement Packages with Methods and Time Schedule:**

1	2	3	4	5	6	7
Ref No.	Assignment (Description)	Estimated Cost (USD)	Selection Method	Review by Bank (Prior/Post)	Expected Proposal Submission Date	Comments
1.	Crooked Tree Road and Causeway Upgrading – Gender-Sensitive Feasibility Study and Preparation of Detailed Designs		QCBS	Prior	September, 2016	TOR subject to prior review.

**III. Implementing Agency Capacity Building:** PEU staff will be provided with access so that they can participate in CDB’s online procurement course.

**IV. Summary of Proposed Procurement Arrangement:**

Project Component	CDB (USD'000)										NBF (USD'000)		Total Cost (USD'000)
	Primary		Secondary		Other						Country	Institution	
	ICB	NCB	RCB	LIB	Shopping	DC	FA	QCBS	CQS	SSS			
1. Engineering Services													
2. Surveys and Investigations													
4. Project Management													
5. Contingencies													
<b>Total Project Costs</b>													

- |     |                                   |      |                                   |
|-----|-----------------------------------|------|-----------------------------------|
| CQS | Consultant Quality Selection      | NCB  | National Competitive Bidding      |
| DC  | Direct Contracting                | QCBS | Quality- and Cost-Based Selection |
| EOI | Expression of Interest            | RCB  | Regional Competitive Bidding      |
| FA  | Force Account                     | RFP  | Request for Proposal              |
| ICB | International Competitive Bidding | RFQ  | Request for Quotation             |
| IDC | Interest During Construction      | SSS  | Single-Source Selection           |
| LIB | Limited International Bidding     |      |                                   |
| NBF | Non-Bank Financed                 |      |                                   |

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank’s Information Disclosure Policy.

**FIGURE 1**

**MAP OF BELIZE**



Base 802759AI (CD0493) 2-03



**FIGURE 2**

**MAP OF CROOKED TREE**

