



**CARIBBEAN COMMUNITY
CLIMATE CHANGE CENTRE
(CCCCC or the CENTRE)**

TERMS OF REFERENCE

**for the
Consultancy to**

**Produce a Project Design and to conduct a
Feasibility Study**

for

**Enchaining Climate Risk Management in the
Upper Regions of the Belize River Watershed
Project**

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1 SUMMARY

Country:	Belize
Funding Agency:	Green Climate Fund (GCF)
Project Name:	Enchaining Climate Risk Management in the Upper Regions of the Belize River Watershed Project (PPF-058)
Project Duration:	24 months
Contract Title:	Project Design and Feasibility Study
Contract Number:	#34/2023/GCF/BELIZE-PPF/CCCCC
Type of Contract:	Lump Sum - Consulting Firm
Expected Start Date:	May 2023
Contract Duration:	12 months
Budget:	US \$157,000.00 (\$144,000 for professional fees and US \$13,000 (reimbursables travel, and other project costs)
Duty Station	Home Based (Site Visits expected)
Deadline for Submission	On or before 2:00 p.m. (GMT-6), Friday 12 th May 2023
The CCCCC is an Equal Opportunity Employer	

2 INTRODUCTION

The Government of Belize, San Ignacio and Santa Elena Town Council and the Caribbean Community Climate Change Centre (CCCCC) are developing a Green Climate Fund (GCF) project aimed at building climate resilience into stormwater drainage networks of the upper regions of the Belize River Basin. The project will upgrade and retrofit stormwater drainage infrastructure in flood prone areas in addition to enhancing the flood risk management capacity and climate resilient development planning in several municipalities that buffers the watershed. The project will also support a comprehensive public awareness and education programme on climate risk management.

In Belize, climate change has intensified hydro-meteorological hazards increasing immediate and medium-term vulnerability of the country's population. Erratic precipitation has resulted in increased frequency and intensity of floods. These events continue to impact low-lying coastal plains as well as densely populated urban spaces causing damage to property and loss of lives and livelihoods. These projections are supported by the regional PRECIS-ECHAM4 – A2 & B2 and the HADCM3 - A2 & B2 models which show percentage change (decrease) in annual rainfall for the period 2071 -2099 for the Caribbean and Central American region¹. The models also show a decrease in average annual rainfall distribution for Belize. Nevertheless, the IPCC AR-6 indicates that although rainfall will decrease in many tropical regions, one can expect rainfall

¹ World Bank. 2018. Climate-Smart Agriculture in Belize. CSA Country Profiles for Latin America and the

events of shorter duration but of high intensity, favorable for generating destructive flash floods in hilly terrain².

The twin towns of San Ignacio and Santa Elena (SI/SE) in the upper regions of the Belize River Basin are vulnerable to observed and projected changes in climate. Floods in the municipality are generally associated with tropical cyclones and atmospheric instability connected to the interaction of cold air mass and warm, moist tropical air mass in the western Caribbean and northern Central America. Major floods are associated with the landfalling of tropical cyclones that create unstable conditions in the north-western Caribbean. Increased storm activities and associated stormwater runoff have intensified seasonal floods over the past three decades. The increased volume of runoff in short periods of time has overwhelmed the capacity of inlets, drains and culverts, to channel water away from properties and roadways leading to flooding within the municipalities. This adversely impacts the lives and livelihoods of many families. In addition, the increased volume of stormwater has increased the pollution load affecting the quality of water in the sub-catchments. This threatens the security of one of Belize's largest sources of freshwater and increases the vulnerability of downstream communities that depend on it. Stormwater runoff carries sediment loads containing untreated urban wastewater along with other land pollutants. This is exacerbated by incidents of prolonged dry days (i.e., drought conditions) that reduce water flow, reducing the dilution capacity of the river. Thus, deteriorating water quality and other ecological services and functions.

Retail business, tourism, and banking services contribute to nearly 70 percent of the local economy of the San Ignacio/Santa Elena area. In recent years, flash flooding during the non-hurricane season has caused severe damage to many homes and businesses. Flood events have also exposed that women are more vulnerable to floods than men due to the conditions that predispose them to severe disaster impacts. Women suffer from physical injuries and loss of livelihoods during floods. Many poor women remain unemployed during and after floods. Difficulties in finding adequate shelter, food, and safe water as well as problems in maintaining personal hygiene and sanitation, are some of the challenges women face during climate related disasters. These vulnerabilities interrupt women's mitigation efforts and adaptation capacities in disaster risk reduction.

Also, the functionality of the stormwater drainage system is further compromised by the presence of various types of solid waste, which increases during flooding events. Debris is washed into drains limiting water flow and drainage capacity. Test from Belize river water samples indicates the presence of contaminants consistent with untreated graywater. The lack of wastewater management considerations in the designs of new homes (e.g., building codes) and the lack of a central facility to regulate stormwater flow and quality have significantly reduced the adaptive capacity of communities. This is further exacerbated by inadequate enforcement of existing regulations and limited outreach and awareness building on comprehensive flood and stormwater management in municipalities. As a result, effluent and other pollutants are washed into the watershed during rain events. Additionally, unregulated urbanization has increased the vulnerability of many communities to flood risk. Urbanization has aggravated flood related challenges. It increases the percentage of impervious areas and increases the volume of runoff. Urban stormwater drainage typically increases velocity of flows, thus leading to higher peak discharges. Natural surface depressions and wetlands that intercept runoff are often lost during the process of urban land development. Furthermore, the increased stormwater runoff and degraded water quality from urban areas also adversely impacts downstream communities and impairs the ecology of the river systems.

² https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf

It is against this background that the CCCCC has secured project preparation funding from the Green Climate Fund (GCF) Project Preparation Facility (PPF) to develop a full funding proposal for a project titled, “Integrated Flood Management in the Upper Regions of the Belize River Watershed”. The GCF, which is the climate finance mechanism set up under the UNFCCC framework to promote **the paradigm shift towards low-emission and climate-resilient development pathways**, provides a unique opportunity for countries, such as Belize, to develop and implement climate change directives to adapt to the related impacts. The GCF Project Preparation Facility (PPF) ensures that countries who would like to apply for the GCF’s funding present all the information necessary to make a fair judgment on the merits of their proposed project. This consultancy is intended to deliver some of the required studies and shape the final Funding Proposal Application to GCF, i.e. the project design including logic framework and feasibility study including technical, financial and economic analysis. The outputs of this assignment should be aligned with the GCF six investment criteria and requirements for the Funding Proposal Application to the GCF.

3 OBJECTIVES

3.1 Overall Objectives

The main objective of the present assignment is to: (i) deliver a project design for a climate resilient stormwater drainage system for San Ignacio and Santa Elena; and (ii) conduct a thorough feasibility study, including technical, financial, and economic considerations, for the recommended and approved climate resilient drainage network. The project design output, at this stage, will be highly dependent on the evaluation of the current situation in Belize, as well as the current plans that the Government of Belize has envisioned for upgrading stormwater infrastructure in the municipality.

The **project design** should encompass all plans that are to be implemented by the Government of Belize and make the most suitable recommendation on how this project can significantly impact the lives of the local population with regards to flood management. Moreover, this consultancy should incorporate any locations within the Belize River Watershed that are deemed to have a significant impact or need immediate flood management intervention.

The project design is expected to *inter alia*: (i) evaluate and recommend appropriate stormwater management alternatives, (ii) prepare conceptual engineering designs for stormwater management infrastructure for the San Ignacio/Santa Elena areas, and (iii) compare scenarios with and without the project against the baseline situation to discern the transformational impact, and other environmental and social factors such as gender and vulnerable groups.

3.2 Specific Objectives

The project design and feasibility study will be cohesive and interconnected. The project design must be feasible, and the solution should be tailored to the current situation in Belize.

The draft project design must include:

- a) Detailed Climate Study (inclusive of flood risk models, flood-event analysis, and climate indicators to measure the effectiveness of solutions proposed) of the upper regions of the Belize River Watershed.
- b) Conceptual Engineering Designs for stormwater management infrastructure (inclusive of constructed wetlands to regulate stormwater flow) in San Ignacio/Santa Elena.
- c) On-site Wastewater Treatment System designs for residential and commercial use in San Ignacio/Santa Elena.
- d) Detailed designs for a National Flood Risk Early Warning System (EWS), inclusive of flood forecasting.
- e) Capacity Needs Assessment (inclusive of guidelines and recommendations) for a National Governance Framework for Early Flood-risk Detection and Response.
- f) Communication and Capacity development Strategy

Once the preliminary designs are approved by the contracting party, CCCCC, the Government of Belize and San Ignacio/Santa Elena Town Council, the consultant will conduct a comprehensive feasibility study and where necessary adjust the design for optimal effectiveness and efficiency.

This Consultancy will undertake a comprehensive feasibility analysis, that considers the technical, financial, economic, social, and environmental factors. The feasibility process will ensure that the

list of prioritized activities is widely acceptable, cost effective and promotes the long- term sustainability of the investments.

The feasibility study must include:

- a) Identify and analyze the climate change impacts on the existing flood management infrastructure and barriers (financial, technical, legal, social, environmental and economic) to addressing these impacts.
- b) Drainage congestion study inclusive of a hydrological study, sediment transport, and transboundary and dam water assessment and management plan, and stormwater drainage engineering designs.
- c) Analysis of Existing Conditions, Site and Landscape Evaluation, documenting and analyzing the significance of the proposed need for stormwater management ensuring completeness of treatment for all the foreseen investments and works, and including:
 - i. recommendations for any missing element(s) and/or additional required works to ensure the maximum benefit of an integrated conservative method of the site. recommendations for any missing element(s) and/or additional required works to ensure the maximum benefit of an integrated conservative method.
 - ii. proposed unified treatment of wastewater and other key elements.
- d) An analysis and recommendations of treatment technologies, including the use of constructed wetlands and other technologies to manage stormwater and wastewater effluent.
- e) An assessment of urban land use planning and emergency response planning options, inclusive of the development of flood warning systems.
- f) Financial Assessment Study (inclusive of Economic/Financial Analysis, Co-financing analysis report, Beneficiaries Mapping report, draft Detailed Budget, and Procurement Plan).
- g) Implementation timetable including key project milestones and monitoring and evaluation plan.

Final Project Design

The Final Detailed Project Design identifies all activities to be implemented, specified project site parameters, stormwater management technologies, structural, architectural, and technical solutions. As part of the final project design the consultant will be expected to prepare the project log frame with well-defined indicators, targets, inputs, and outputs; making sure that indicators in the log frame fully respond to the GCF indicator framework for adaptation.

- Produce a scoping report for the project on the consultations, research and analysis conducted.
- Produce a detailed budget (template provided) and implementation timeline (template provided).
- Risk assessment and a risk matrix with potential mitigation measures
- Identify possible co-financing sources, with their realization being ranked and possible risks identified, to assist in the achievement of the proposed project.

4 PURPOSE

The purpose of this consultancy is as follows:

- (i) to produce a technical project designed to upgrade stormwater drainage networks in flood prone areas of upper regions of the Belize River Basin and enhance the flood risk

- management capacity and climate resilient development planning in several municipalities.
- (ii) Development of a preliminary cost benefit and risk analysis of the proposed design and
 - (iii) To Conduct a detailed feasibility study for the proposed project design. The development of the project design will be guided by the needs of Belize, according to the Government of Belize and the San Ignacio/Santa Elena Town Council.

5 TASKS

5.1 General

This consultancy will produce written outputs as:

1. Inception Report (include extent of studies)
2. Baseline Study
3. Project Design (project log frame; detailed budget and implementation timeline, risk matrix)
4. Feasibility Study (Financial Model and Cost-Benefit Analysis).

It is anticipated that this consultancy will collaborate with the project implementation team from the CCCCC, the Government of Belize and the San Ignacio/Santa Elena Town Council.

5.2 Specific tasks

The following are specific activities geared at delivering an Inception Report, Baseline Study, Project Design and Feasibility Study.

5.2.1 Activity 1: Project Inception

5.2.1.1 Sub-activity: Review of Pertinent Documentation

The consultant(s) will undertake a review of all pertinent reports and papers on the Project and all relevant technical documents . As part of the review, it is advisable that the Consultant(s) familiarize him/herself with the entire suite of documents and the requirements to produce technical specifications and supporting documentation according to the GCF and the CCCCC requirements for the final funding proposal.

5.2.1.2 Sub-activity : Inception Meeting

An inception meeting with the Project Management team shall be convened by the Consultant virtually to discuss the Consultant's findings/ suggestions/ recommendations, determine the programme of work, confirm work schedules and activity requirements, seek clarification on issues pertinent to the assignment, discuss remuneration schedule and to plan the logistics of implementation. As the precursor to subsequent national and regional consultations, this first meeting will also serve to foster an understanding of the environment within which the assignment is to take place and to agree on the protocol for conducting the assignment. The meeting shall agree on the establishment and composition of an Oversight/ Steering Committee that will serve in an advisory capacity to the Consultant(s) for guidance in the conduct of the assignment. This Committee is expected to comprise executive and senior management of the Centre. The report on this inception meeting shall outline the schedule of activities and the methodology to be employed for the execution of the contract.

5.2.1.3 Sub-activity: Preparation of Inception Report

Preparation of an inception report including:

- (i) a detailed work plan for the execution of the assignment,
- (ii) methodology to be followed and
- (iii) Any gaps identified that would affect the project execution.

the timeline for accomplishment of the tasks of the assignment. The document should be no more than 20 pages and shall specify: the methodology to be deployed for the development of the technical specifications; milestones; information requirements; summary of agreed issues to be investigated; administration requirements and roles of Centre personnel and that of the consultant; potential barriers to the conduct of the assignment and suggested approaches to mitigating the impacts.

- **DELIVERABLE One (1): Inception Report**

5.2.2 Activity 2: Conduct Baseline Study

This task involves the review of the Government of Belize (i.e., National Hydrological Service and National Emergency Management Organization and the Department of Local Government) and the San Ignacio/Santa Elena Town Council flood management framework and practices. This should also include an assessment of flood management and drainage infrastructure in the San Ignacio/Santa Elena Town area. The assessment should identify barriers to and needs for effective drainage and its current and future vulnerability to climate variability and change (e.g., capacity, flow, appropriateness and treatment effectiveness, reliability and state of repair, maintenance practices, suitability, bottlenecks and quality and availability of materials and equipment). This review should also consider the institutional, technical, legal, and financial constraints.

Additionally, the study should identify and describe a set of actions (see project concept note) (i.e., components, outputs, and activities) that will be undertaken by the project to address the barriers described above. The study should also elaborate the practicality of interventions selected and how the activities will provide needs in a sustainable manner. *A detailed description of the trade-offs of selected interventions, as well as possible environmental and social implications, should be included in the feasibility study.*

The study shall also identify the respective needs and concerns of different disadvantaged groups and/or those with less voice, such as women/financially disadvantaged, to be addressed in the design, implementation, monitoring and evaluation of the project activities.

The baseline study should also include the following:

- a) A description of the project area including information on the demographics, economy, topography, maps etc.
- b) A description of the climate change problem the project is expected to address. Describe the adaptation needs (climate hazards and associated risks based on impacts, exposure, and vulnerabilities) that the proposed interventions are expected to address. Also describe the most likely scenario (prevailing conditions or other alternative) that would remain or continue in the absence of the proposed interventions. *A detailed description of the methodologies used to derive such information should be included in the feasibility study.*
- c) A description of any recent or ongoing projects/interventions that are related to the project from other domestic or international sources of funding, and how they will be complemented by this project (e.g., scaling up, replication, etc.). Please identify current gaps and barriers

regarding related (recent or ongoing) flood mitigation projects and elaborate further how this project complements or addresses these. *This must include designs for a National Flood Risk Early Warning System (EWS), inclusive flood forecasting and Capacity Needs Assessment (inclusive of guideline and recommendations) for a National Governance Framework for Early Flood-risk Detection and Response.*

- d) Existing legislations, policies, and procedures in Belize for flood and disaster risk management providing documented suggestions for increasing the reliability of results.
- e) Potential to retrofit and expand drainage infrastructure in San Ignacio/Santa Elena area in the medium-term, taking into consideration potential for technological upgrade inclusive of Conceptual Engineering Designs for stormwater management (i.e., drainage, constructed wetlands to regulate stormwater flow and On-site Wastewater Treatment System designs for residential and commercial use, including septic-tanks, soak-aways, leach fields, packaged plants, grease traps, etc.) infrastructure in San Ignacio and Santa Elena Town.
- f) Communication and Capacity development Strategy for the relevant national and local government practitioners.
- g) Description of the planning/land use process for municipality level across Belize.
- h) Relevant information/data such as plans, maps and geo-spatial data and policies and legislative framework.
- i) Field reconnaissance for formulation of basic project design.
- j) The Government of Belize's vision for future municipal development and flood risk management.
- k) Environmental, Social and Gender considerations at preliminary plan stage

- **DELIVERABLE Two (2): Baseline Study**

5.2.3 Activity 3: Draft Project Design

(i.e., Project log frame; detailed budget and implementation timeline and risk matrix)

The Consultant shall compile data and information outlined in the **Baseline Study** for the development of the Draft Project Design, including a detail description of the project components, outcomes, outputs, and activities (i.e., project log frame), detailed budget³, implementation plan inclusive of key project milestones⁴, indirect and direct project beneficiaries and risk matrix (*detailed description of the methodologies used to derive such information, should be included in the feasibility study*). The Project Log Framework shall be in accordance with the GCF's most recent Performance Measurement Framework under the Results Management Framework. The project design should involve initial or early consultation with various stakeholders such as government ministries and departments, and to the industry stakeholders to ensure maximum country buy-in and ownership.

- **DELIVERABLE Three (3): Draft Project Design.**

5.2.4 Activity 4: Conduct Feasibility Study

(i.e., Detailed Climate Assessment, Drainage Congestion Study, Financial Model and Cost-Benefit Analysis, Beneficiaries Mapping, Urban Land-use Planning Assessment and Engineering Designs)

³ <https://www.greenclimate.fund/document/detailed-budget-plan-template-annex-4-funding-proposals>

⁴ <https://www.greenclimate.fund/document/implementation-timetable-annex-5-funding-proposals>

The feasibility study shall evaluate the data information provided in the Baseline Study and Draft Project Design and to analyze the cost benefit of the proposed project intervention, for flood management. The feasibility of the project shall describe agreed interventions, including physical investments anticipated over a planning horizon of 30 years. The study should investigate the technical, climate, financial, and economic feasibility of the proposed project activities. The studies should compare scenarios with and without the project against the baseline situation to discern the transformational impact. Furthermore, an assessment of observed and projected climate impacts on floods and flood risk should form the basis of all studies assessments conducted (i.e., drainage congestion study, hydrological study, flood-event analysis, transboundary management, dam water management, engineering designs, technological solutions and co-finance analysis, maintenance study). These studies should include land surveying using tools such as Global Positioning Systems (GPS), and other mapping equipment to identify existing road networks and drainage systems and the elevations of all road junctions and drainage flow direction. This will be complimented by the mapping of roads and drainage network and the identification of sub – catchments in the San Ignacio and Santa Elena municipality. Also, peak discharge should be computed, and capacity of drainage channels validated. The feasibility study will incorporate the technical, economic, legal, operational, and scheduling feasibility of the project. The appropriate computer-based hydrologic models to suit the purposes of the study, considering the potential use of the model in assessing management options (including catchment-scale mitigation measures such as dams and afforestation) should be used. The model shall have the capability to represent all features of the study area, which are likely to have a significant effect on flood behavior.

The consultant shall prepare a cost benefit analysis, including detailed cost estimates for each component covering, civil works, equipment and materials, consulting services, project management, taxes and duties, physical and price contingencies, and interest and other charges during construction. In addition, prepare an operation and maintenance plan with cost implications and responsibilities for all identified components. The preliminary analysis shall also include an economic analysis covering, among other things, demand analysis (including willingness to pay), least economic cost analysis, economic cost and benefit analysis, economic internal rates of return, average incremental economic costs, sensitivity analysis, risk analysis, benefit distributional analysis, poverty impact ratios, affordability analysis, and co-financing assessment. This should include an explanation of why the project requires GCF funding to address mitigation or adaptation measures (i.e., why is the project not currently being financed by the public and/or private sector? Which market failure is being addressed with GCF funding? Are there any other domestic or international sources of financing?).

5.2.4.1 Sub-activity 4.1: Impacts of Climate Variability and Change Climate Change on Flood Management Infrastructure

This activity shall result in an evidence-based analysis to show that the proposed activities is likely to be an effective adaptive response to the risk or impact of a specific hazards influenced by climate change The analysis should show how the project addresses current and future projected climate change risk or impact, and why it is likely to be an effective response. Also, the assessment should identify the systems at risk and the climate change hazard affecting them or expected to in the future. They should show how climate change has led, or will lead, to the specific risk or impact that the proposed activities address using the best available information. Where relevant, the assessment should also consider any non-climatic factors that may be causing or exacerbating the risk or impact and describe the interactions between climate and non-climatic drivers. Vulnerability assessments

can be used to identify groups most susceptible to the climate change impact and therefore will provide information to select and prioritize appropriate adaptation outcomes.

The assessment should also explain how the proposed activities will reduce the exposure and/or vulnerability (of people and the ecosystems) and thus lessen the climate change risk or impact. Where relevant, a justification should be given of why the proposed activities were selected over alternatives. Proposals should consider barriers (e.g., technical, social, institutional, regulatory) to the implementation of the activities and describe how the project aims to overcome those barriers. Proposals should apply a methodological approach for the quantification of the number of beneficiaries (i.e., indirect, and direct) expected to result from the activities.

As such, the assessment shall consider stormwater flow and characteristic: peak discharge and capacity of drainage channels and other important characteristics to augment the drainage network, determination of relationships between dry weather and wet weather flows for combined systems, frequency and magnitude of storm water overflows and water bodies to which they flow, and infiltration of stormwater flows into the water supply network with emphasis on toxic/hazardous materials discharged into the watershed if information is available. The study should recommend various scoring opportunities for improvements in technical efficiency using alternative technologies (including energy efficient solutions) and/or infrastructure solutions, monitoring of wastewater quality; standards and practices, process control, describe and recommend present effects (environmental impact) of treated and untreated wastewater discharges on receiving waters considering existing regulations.

5.2.4.2 Sub-activity 4.2: Theory of Change (ToC)

The consultant should include a description of the monitoring and evaluation system that will be used to assess the climate impact of the proposed activities. The theory of change should contain a goal statement and describes how the proposed project will contribute towards the goal statement by using results chain links from activities, outputs, to outcomes. This should also be a ToC diagram which visually represents the same logic in the narrative description. The ToC diagram and narrative may include a wide range of co-benefits as applicable in the context of the project. All co-benefits will need to be elaborated. The theory of change should also include any relevant barriers (social, gender, fiscal, regulatory, technological, financial, ecological, institutional, etc.) that need to be addressed as well as risks and assumptions.

5.2.4.3 Sub-activity 4.3: Preliminary Risk Assessment and Matrix

For the project activities identified above the consultant is expected to identify and assess potential risks and make recommendations for mitigating these risks.

- a) The **Risk Assessment** will result in the production of an integrated risk assessment analysis that robustly uses problem formulation, risk analysis and risk characterization protocols to establish how these risks are applicable to the project and to the investment in the project.
- b) **Risk formulation** will be conducted that focuses on the risk's studies and thereafter management and mitigation suggestions/actions for each risk. The problem formulation phase also includes developing a conceptual model of stormwater runoff, wastewater discharge, and the interactions between them.
- c) **Risk analysis** studies will be conducted to determine the probability and magnitude of any adverse effect with specific consequences occurring to beneficial uses and values. likely purposes in terms of technical and economic aspects and associated environmental and social

risks with it.

d) **Risk characterization** will evaluate and report on the problem formulation and risk analysis results for decision-making and risk management purposes.

- **DELIVERABLE Three (3): Feasibility Study (i.e., Detailed Climate Assessment, Drainage Congestion Study, Financial Model and Cost-Benefit Analysis, Beneficiaries Mapping, Urban Land-use Planning Assessment and Engineering Designs)**

5.2.5 Activity 5: Final Project Design

(i.e., Project log frame; detailed budget and implementation timeline, risk matrix)

The Consultant shall compile data and information outlined in the **Feasibility Study** for the development of the Final Project Design, including a detailed description of the project components, outcomes, outputs, and activities (i.e., project log frame), detailed budget⁵, implementation plan inclusive of key project milestones⁶, indirect and direct project beneficiaries, risk matrix and procurement plan⁷. The Project Log Framework shall be in accordance with the GCF's most recent Performance Measurement Framework under the Results Management Framework. The final project design should involve consultation with all relevant stakeholders to ensure maximum country buy-in and ownership.

5.2.5.1 Sub-activity 5.1: Implementation Arrangements

The consultant should provide a description of the project implementation structure, outlining legal, contractual, institutional, and financial arrangements from and between the GCF, the Accredited Entity (AE) and/or the Executing Entity(ies) (EE) or any third parties (if applicable) and beneficiaries. This shall include information on governance arrangements (supervisory boards, consultative groups among others) set to oversee and guide project implementation. Provide a composition of the decision-making body and oversight function. Also, information on the financial flows and implementation arrangements (legal and contractual) between the AE and the EE, between the EE or any third party and beneficiaries. Provide a diagram(s) or organogram(s) that maps such arrangements including the governance structure, legal arrangements, and the flow and reflow of funds between entities.

The consultant should also describe how the project will successfully exit once implementation is completed, including how results and benefits will continue beyond the project period and how the contribution to paradigm shift will be maintained. Include information pertaining to the longer-term ownership, operations, and maintenance of investments (e.g., key infrastructure, assets, contractual arrangements). Provide information on additional actions to be undertaken by the public and private sector or civil society as part of the project to ensure sustainability of the results attained.

5.2.5.2 Sub-activity 5.2: Expected Performance Against Investment Criteria

The consultant should describe the potential of the project to contribute to the achievement of the Green Climate Fund's objectives and result areas. As applicable, describe the envisaged project

⁵ <https://www.greenclimate.fund/document/detailed-budget-plan-template-annex-4-funding-proposals>

⁶ <https://www.greenclimate.fund/document/implementation-timetable-annex-5-funding-proposals>

⁷ <https://www.greenclimate.fund/document/procurement-plan-annex-10-funding-proposals>

benefits for adaptation. Provide the intended outcomes for adaptation by elaborating on how the project contributes to increased climate-resilient sustainable development.

- **DELIVERABLE Four (4): Final Project Design.**

6 QUALIFICATION AND KEY EXPERIENCE

The assignment is to be undertaken by a suitably qualified Consulting Firm. The selected Consultant(s) is required to possess the minimum competency requirements listed hereunder. The selected Consultant may subcontract any portion of the assignment with the written consent of the Centre but will be ultimately responsible for all required/specific deliverables to the Centre, as well as assume responsibility for all activities geared towards achieving the objectives of these terms of reference.

5.1.1 General Areas of Expertise/Experience

The Consulting Firm is expected to demonstrate expertise in the following areas:

- Proven expertise and in-depth knowledge of watershed management and climate change policies and practices in the Latin America and the Caribbean context.
- Knowledge of flood management in Belize and/or in the Caribbean and Latin American region especially in relation to matters such as to technical requirements.
- Knowledge of stormwater management practices and international protocols.
- Must have knowledge of the wastewater sector and the characteristics available in the Caribbean / Latin American region.
- At least 5 years of experience in stormwater management and engineering designs.
- Track-record of participating in the engineering, execution, operation and/or maintenance aspects of at least 5 similar projects.
- Must have at least 5 years proven experience in conducting economic and financial analysis and be able to work at national, regional, and international levels.
- Possess 5 years of proven experience in environmental, social and gender matters related to drainage and wastewater management in developing countries and preferably in the Latin America and the Caribbean region.
- Should have available skilled experts with advanced degrees and expertise in the respective areas: hydrology, economics, engineering, watershed management, environmental sciences, environmental policy, gender impact assessment and mainstreaming, sustainable development, or other relevant fields.
- At least 5 years of experience in climate change, technical, financial, and economic analyses, environmental analyses and/or research in the field of sustainability.
- Demonstrate experience/knowledge of GCF procedures and prior experience in preparing a GCF Funding proposal would be an asset.

6.1.1 Specific Areas of Expertise/Experience

The Consultant's proposal shall provide all key experts specified below satisfying the qualifications and experience requirements, but the number of each expert proposed by the consultant shall be determined having due regard to the deadline set for each of the deliverables. In addition, the Consultant must specify the qualifications and relevant experience of each specialist to be assigned to this assessment. 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.

For this assessment, the relevant indicative experience for the assignment is expected to include but not limited to:

1. **Lead Consultant #1: Hydrologist/Team Leader.** The Team leader will coordinate the work of the team and have primary responsibility for the outputs of the assignment. He/she is expected to have the following expertise and qualifications:
 - Minimum of Master's degree in Hydrogeology (preferred), Hydrology or Geological Sciences related to hydrogeological analysis for Flood Management – a relevant multidisciplinary background is considered an asset.
 - Minimum of five (5) years' documented expertise on drainage congestion analysis or flood risk models and flood-event analysis.
 - Minimum of two (2) assignments similar in nature and complexity.
2. **Consultant #2: Engineer: Environmental, Hydraulic or Civil Engineering or Construction Engineering and Management will be an asset.** This Specialist should possess the following mix of expertise and qualifications:
 - Minimum of a Bachelor's degree in Environmental, Hydraulic or Civil Engineering, Master's degree in construction engineering and management or another related fields.
 - At least 5 years' proven experience in preparing detailed engineering drawings for drainage systems including facilities and networks; and,
 - At least 5 years' experience in installing or managing drainage systems implementation or design planning.
3. **Consultant#3: Wastewater Treatment/ Management.** The specialist is expected to have the following expertise and qualifications:
 - Master's degree in the field of Environmental, Civil, or Chemical Engineering, or a related technical engineering or science field, or another related technical field.
 - Five (5) years minimum experience designing and constructing wastewater treatment systems, collection networks.
 - Three (3) years minimum relevant experience in the Caribbean or a Small Island Developing State.
 - Evidence of a strong track record of preparing high-level documents and reports on climate change relating to wastewater management systems.
 - Understanding of social issues and culture in Caribbean island nations.
 - Strong writing and speaking skills in English.
 - Previous experience working with the Green Climate Fund strongly desired.
4. **Consultant #4: Finance Specialist/ Economist: Climate Finance/ Finance, Economics or Financial Mathematics.** This team member should possess the following mix of expertise and qualifications:
 - Minimum of a Master's degree in Finance, Banking, Economics, Applied Mathematics, Accounting, Auditing or another related field.
 - At least five (5) years' proven experience in conducting economic feasibility studies for climate adaptation or mitigation infrastructure projects funded by international development organizations.

- At least five (5) years’ proven experience in analyzing risks and recommending mitigation measures to safeguard risk exposures of the executing agency and/or other agencies related to the project financing.

5. **Consultant #5: Watershed/Environmental Specialist.**

- Minimum of a Master’s degree in Watershed Management, Eco-Hydrology, Environmental Science, Geology, Wildlife Management, Natural Resources Management or another related field.
- At least five (5) years of year’s work experience in environmental natural resources management, climate change, or advocacy.
- At least five (5) similar assignments in past and able to show written proofs of the same.
- Demonstrated experience in either watershed mapping, water resource management, disaster management, modeling of water systems especially storm water management, design and implementation of water conservation or flood management measures will be considered.

The above services shall be carried out in accordance with generally accepted professional practices, following recognized engineering, hydraulic and climate resilience management principles, and practices. The Consultants’ scope of work is understood to cover all activities necessary to accomplish the stated objectives and outputs, 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.

7 LOCATION AND IMPLEMENTATION PERIOD

7.1 Location

The Consultant’s assigned specialists are expected to work from their own office space. If an international or regional consultant is selected, the assigned experts will be expected to travel to Belize.

7.2 Commencement date, Level of Effort, and period of implementation of tasks

The intended commencement date is around May 29th, 2023. The level of effort for this assignment is not anticipated to be more than 240-man days over 12 months’ duration.

8 MANAGEMENT ARRANGEMENT

The consultancy will be commissioned by the CCCCC. The Consultant will report to CCCCC for contractual and administrative purposes. The CCCCC will be responsible for the oversight of the deliverables of the TOR. Members of the project core team will provide additional technical advice and inputs, overall coordination, and oversight for this study. The Consultant will liaise with all stakeholders from the project core team but will ultimately report to the Head of the Programme Development and Management Unit, CCCCC.

8.1 Reporting Arrangements/Outputs

The consultant will be required to submit the following number of reports to the CCCCC:

Deliverable	Timeline
(a) Inception Report	The report shall be presented within 4 weeks after contract signing and should describe the approaches proposed to be taken to prepare and deliver the scope of works outlined.
(b) Climate Vulnerability Assessment Report	The report shall be presented 12 weeks after contract signing and should include the site characterization, climate change scenarios, hydraulic modelling, and the vulnerability analysis. It should include an analysis of drainage, hydraulic structures, and all civil works design options for the upgrading of the road based on various event scenarios
(c) Draft Design Report	The draft Design Report shall be presented within 27 weeks after contract signing and should consist of a preliminary design, cost and quantity estimates for the preferred option
(d) Feasibility Study Report	The report shall be presented 31 weeks after contract signing and will include traffic, road safety, financial and economic analysis, show potential economic benefits and revised costs to validate feasibility.
(e) Environmental and Social Impact Assessment Report (ESIA) Report	The draft report should be submitted for prior review within 32 weeks after contract signing.
(f) The Final Design Report	The report shall be presented within 40 weeks of contract signing and should consist of agreed detailed project designs in editable drawing format, revised cost and quantity estimates and bid documents.
<i>Comments on the Reports should be anticipated within four weeks of receipt and the consultant(s) will adjust the ongoing work according to the comments received. The consultants will revise the draft reports within one month of receipt and in accordance with the comments received.</i>	

All the above Reports /Deliverables should be submitted in three hard copies and editable electronic format.

9 PAYMENT SCHEDULE

The payments will be done according to the following schedule: -

Advance Payment to be made against bank guarantee of the same amount. - 20%

- D1 Inception Report -10%
- D2 Climate Vulnerability Assessment Report - 10%
- D3 Draft Design Report - 30%
- D4a Feasibility Study Report – 20%
- D4b Environmental and Social Impact Assessment Report - 15%
- D5 Final Design Report - 15%

10 EVALUATION CRITERIA

Candidates applying for this consultancy shall meet a minimum score of 70 points on the evaluation scale below.

No.	Description	Points
Technical Proposal		
A1	Approach, Methodology, and Work Plan for the assignment showing implementation schedule, timelines, and milestones for the activities	10
The Firm		
A2	At least five (5) years of experience in stormwater management and engineering designs.	5
A3	Track-record of participating in the engineering, execution, operation and/or maintenance aspects of at least 5 similar projects.	5
A4	Must have at least five (5) years proven experience in conducting economic and financial analysis and be able to work at national, regional, and international levels.	5
A5	Possess five (5) years of proven experience in environmental, social and gender matters related to drainage and wastewater management in developing countries and preferably in the Latin America and the Caribbean region.	5
A6	At least five (5) years of experience in either climate change, technical, financial, and economic analyses, environmental analyses, or research in the field of sustainability.	2.5

No.	Description	Points
A7	Demonstrate experience with GCF procedures and prior experience in preparing a GCF Funding proposal would be an asset.	5
Key Expert 1: Hydrologist / Team Leader		
B1	Minimum of a Master's degree in Hydrogeology (preferred), Hydrology or Geological Sciences related to hydrogeological analysis for flood management. A relevant multidisciplinary background is considered an asset.	10
B2	A minimum of five (5) years demonstrated experience in drainage congestion analysis and/or flood risk models and flood-event analysis.	5
B3	Minimum of two (2) assignments similar in nature and complexity.	2.5
Key Expert 2: Engineer		
C1	Minimum of a Master's in Project Planning/Development, Development Studies, Finance, Climate Change, Environmental Science/Management, or another related discipline.	5
C2	At least five (5) years proven experience in preparing detailed engineering drawings for drainage systems including facilities and networks.	2.5
C3	At least five (5) years' experience in installing or managing drainage systems implementation or design planning.	2.5
Key Expert 3: Wastewater Treatment/Management		
D1	Minimum of a Master's degree in Environmental, Civil or Chemical Engineering or a related technical engineering or science field, or another related technical field.	5
D2	A minimum of five (5) years' experience designing and constructing wastewater treatment systems and/or collection networks.	2.5
D3	Minimum of three (3) years' experience working in the Caribbean or a Small Island Developing State.	2.5
D4	Experience working with the Green Climate Fund strongly desired.	2.5
Key Expert 4: Finance Specialist/Economist		
E1	Minimum of a Master's degree in Finance, Banking, Economics, Applied Mathematics, Accounting, Auditing or another related field.	5
E2	At least five (5) years proven experience in conducting economic feasibility studies for climate adaption or mitigation	2.5

No.	Description	Points
	infrastructure projects funded by international development organizations.	
E3	At least five (5) years proven experience in analyzing risks and recommending mitigation measures to safeguard risk exposures of the executing agency and/or other agencies related to project financing.	2.5
Key Expert 5: Watershed/Environmental Specialist		
F1	Minimum of a Master's degree in Watershed Management, Eco-Hydrology, Environmental Science, Geology, Wildlife Management, Natural Resources Management or another related field.	5
F2	At least five (5) years' work experience in environmental natural resources management, climate change or advocacy.	2.5
F3	Proven working experience with at least five (5) similar assignments	2.5
F4	Demonstrated experience in either watershed mapping, water resource management, disaster management, modeling of water systems especially storm water management, design and implementation of water conservation and flood management measures will be considered an asset.	2.5
	TOTAL	100

11 APPLICATION SUBMISSION PROCEDURE

In order to be responsive to the requirements of the Request for Proposal (RFP), interested firms are required to submit the documents listed in the RFP, Instruction to Consultants, 3.4 and 3.6 on or before the deadline for submission.

The Centre's electronic-procurement system shall be used to manage the Submission, withdrawal, substitution, or modification of Bids.

The Centre's electronic-procurement system shall be used to manage the submission, withdrawal, substitution, or modification of Proposals. Consultants must first register by creating a Username, profile and password before accessing the bid submission form at the URL:

www.caribbeanclimate.bz/bid-submission.

1. Prior to Proposal Submission, Consultants will be required to complete the submission form with fields that include:
 - (i) Name of Consultant
 - (ii) Contract Reference
 - (iii) Contract Title
 - (iv) Name and Email address of uploader

Consultants should upload separate password protected PDF files for the Technical proposal and the Financial proposal. An automatic receipt time stamped email will be sent to the uploader's

email account as a receipt and proof of submission. Each submission will be given a confirmation number.

12 SUBMISSION OF PROPOSALS

- 1) Proposals should be addressed to **Colin Young (PhD), Executive Director, Caribbean Community Climate Change Centre.**
- 2) Proposals must be uploaded as files to <http://www.caribbeanclimate.bz/bid-submission/>.
- 3) The subject matter of the submission must read: **“Project Design and Feasibility Study”**.
- 4) Proposals must be secured with a password. Such password must be emailed to corellano@caribbeanclimate.bz no later than 15 minutes prior to the deadline for bid submission. The subject matter for email containing password must read: **Project Design and Feasibility Study** (Consultant’s Name).

Requests for Clarification: email: corellano@caribbeanclimate.bz Attention: **Ms. Cindy Orellano, Procurement Officer (Lead)**. Requests for clarification should be received by the CCCCC no later than: **Friday, 28th April 2023**. Consultants are advised that the responses to the requests for clarification will be posted by **Friday 5th May 2023** to the CCCCC’s Webpage at: <https://www.caribbeanclimate.bz/category/opportunities/>

DEADLINE for submission of Proposals: on or before 2:00 p.m. (GMT-6), Friday 12th May 2023

The Caribbean Community Climate Change Centre reserves the right to accept or reject any submission and to annul the process and reject all submissions at any time prior to the contract signature without thereby incurring any liability.