



STRENGTHENING DISASTER AND CLIMATE RESILIENCE IN THE EASTERN AND SOUTHERN CARIBBEAN (SDCR) PROJECT

REQUEST FOR PROPOSAL

For Consultancy Services to Survey of Building Characteristics and Lower Reach of the Speightstown Watercourse in Barbados.

The Caribbean Institute for Meteorology and Hydrology (CIMH) has received financing from the United States Government through the United States International Development Agency (USAID) towards the **Strengthening Disaster and Climate Resilience in the Eastern and Southern Caribbean (SDCR) Project** and intends to apply a portion of the proceeds to eligible payments under a contract for which this invitation is issued. According to the Assistance Award agreement governing the SDCR Project, the authorized geographic code for procurement of goods and services under this award is US Government Code 937. As such, in addition to the United States of America and the award recipient countries,¹ a list of countries from which eligible consultant teams, companies, firms or individuals can be engaged according to US Government Code 937 is attached at ANNEX 1. The CIMH, the Implementing Agency, now wishes to procure consultancy services to **survey of building characteristics and lower reach of the Speightstown watercourse in Barbados.**

The primary objectives of this consultancy are to (i) perform a systematic survey of individual building structures located in the Speightstown watershed in Barbados, within the geographical study area predefined by the CIMH and (ii) survey the lower reach of the Speightstown channel in Barbados as defined by the CIMH inclusive of channel banks, road crossings and hydraulic infrastructure (e.g. culverts). Further details can be found in the attached Terms of Reference (ANNEX 2). The duration of the assignment is expected to be for a period of two (2) months.

The CIMH now invites interested eligible parties to submit a proposal for the provision of these consultancy services.

In the assessment of submissions, consideration will be given to technical competence, qualifications and experience, local and regional experience on similar assignments, financial capability and existing commitments. All information must be submitted in English, on or before **September 22, 2020, 4:00 pm- (Barbados Time)** to sdcr@cimh.edu.bb, and addressed to:

Dr David Farrell,
Principal,
Caribbean Institute for Meteorology and Hydrology (CIMH)
Husbands, St. James , BARBADOS

The email containing each submission should include the name and address of the applicant and shall be clearly marked **“Proposal for Consultancy Services to Survey of Building Characteristics and Lower Reach of the Speightstown Watercourse in Barbados.”**

Further information may be obtained through email submission to Attn: Mr. Shawn Boyce, Chief of Hydrology at sdcr@cimh.edu.bb

The submissions shall be evaluated by the CIMH with the highest ranked proposal being advanced for contract negotiations. The CIMH reserves the right to accept or reject late applications or to cancel the present request for proposals partially or in its entirety. It will not be bound to assign any reason for not selecting any applicant and will not defray any costs incurred by any applicant in the preparation and submission of proposals

¹ Recipient Countries - Antigua & Barbuda, Barbados, Dominica, Grenada, St. Kitts and Nevis, Saint Lucia, and St. Vincent and the Grenadines

ANNEXES

ANNEX 1 - LIST OF CODE 937 AWARD ELIGIBLE COUNTRIES

1. United States of America
2. Recipient Countries
 - a. Antigua & Barbuda,
 - b. Barbados,
 - c. Dominica,
 - d. Grenada,
 - e. St. Kitts and Nevis,
 - f. Saint Lucia, and
 - g. St. Vincent and the Grenadines
3. Other Eligible Developing Countries (*listed below*)



02/06/2012New Edition

List of Developing Countries

A Mandatory Reference for ADS Chapter 310

Low income/lower middle income

Afghanistan	Gambia, The	Myanmar
Bangladesh	Guinea	Nepal
Benin	Guinea-Bissau	Niger
Burkina Faso	Haiti	Rwanda
Burundi	Kenya	Sierra Leone
Cambodia	Korea, Dem Rep.	Somalia
Central African Republic	Kyrgyz Republic	Tajikistan
Chad	Liberia	Tanzania
Comoros	Madagascar	Togo
Congo, Dem. Rep	Malawi	Uganda
Eritrea	Mali	Zimbabwe
Ethiopia	Mozambique	
Angola	India	São Tomé and Príncipe
Armenia	Iraq	Senegal
Belize	Kiribati	Solomon Islands
Bhutan	Kosovo	Sri Lanka
Bolivia	Lao PDR	Sudan
Cameroon	Lesotho	Swaziland
Cape Verde	Marshall Islands	Syrian Arab Republic
Congo, Rep.	Mauritania	Timor-Leste
Côte d'Ivoire	Micronesia, Fed. Sts.	Tonga
Djibouti	Moldova	Turkmenistan
Egypt, Arab Rep.	Mongolia	Tuvalu
El Salvador	Morocco	Ukraine
Fiji	Nicaragua	Uzbekistan
Georgia	Nigeria	Vanuatu
Ghana	Pakistan	Vietnam
Guatemala	Papua New Guinea	West Bank and Gaza
Guyana	Paraguay	Yemen, Rep.
Honduras	Philippines	Zambia
Indonesia	Samoa	

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ANNEX 2 - TERMS OF REFERENCE

SURVEY OF BUILDING CHARACTERISTICS AND LOWER REACH OF THE SPEIGHTSTOWN WATERCOURSE

1. INTRODUCTION

1.01 The range of natural hazards the Caribbean is exposed to annually, coupled with its vulnerabilities, make the region's risk profile one of the highest in the world. Extreme weather, and its associated hazards, produce annual national losses capable of exceeding 100 percent of a country's Gross Domestic Product (GDP) in exceptional cases. Over recent decades, improvements in hydro-meteorological forecasting and national early warning networks have reduced socio-economic losses. To further reduce losses, the Caribbean Institute for Meteorology and Hydrology (CIMH) in 2007 commenced providing the Caribbean Disaster Emergency Management Agency (CDEMA) with hydro-meteorological scenarios on evolving systems to support the development of qualitative impact information to inform response actions. Through the use of the online Caribbean Dewetra Platform (CDP) - a spatio-temporal platform capable of integrating evolving hazard data, socio-economic and vulnerability information - this collaborative arrangement has evolved to the production of impact-based forecasts that are continuously updated as the hazard forecast information improves.

1.02 The “Expanded Weather and Climate Forecasting and Innovative Product and Service Development and Delivery in the Caribbean” project executed through the African Caribbean Pacific (ACP)-EU-Caribbean Development Bank Natural Disaster Risk Management (CDB-NDRM) programme funded by the European Union (EU) provided the framework for the CIMH to work with “Centro Internazionale in Monitoraggio Ambientale, Fondazione CIMA” (hereinafter CIMA) to demonstrate the applicability of the Rapid Analysis and Spatialisation of Risk (RASOR) platform to the Caribbean context. RASOR performs quantitative multi-hazard risk analysis for the full cycle of disaster management, including targeted support to critical infrastructure monitoring and is seen as a useful complement to the CDP for quantifying risk and supporting risk-based forecasting. RASOR offers a single work environment that generates new risk information across hazards, data types and user communities. Two (2) applications of the RASOR platform were demonstrated. The first application demonstrated a workflow for building scale flood risk assessments using Holetown, Barbados as the target location. The second application demonstrated the feasibility of country scale risk forecasting through the extraction of the wind field from a hindcast of Hurricane Matthew over Haiti. At the time, outputs from the CIMH Weather Research and Forecasting (WRF) 4km model were used to support the analysis.

1.03 Through the ongoing USAID-funded ‘Strengthening Disaster and Climate Resilience in the Eastern and Southern Caribbean (SDCR) Project’, the CIMH will be working with CIMA to apply the RASOR application to quantify building scale flood risk in Speightstown, Barbados. This will require the development and application of hydrological and hydrodynamic models. Typically, such models require rainfall data and topographical data such as digital elevation models, channel characteristics and cross-sections, dimensions of hydraulic infrastructure and land cover to estimate reasonable expected inundation depths. In order to quantify the risk, the building typology, usage, condition of the exposed assets and replacement costs are usually required to estimate expected damages based on the hazard under investigation.

The focus of this Terms of Reference is to outline the details required for a systematic survey of (i) individual building structures located in the Speightstown watershed and (ii) channel cross-sections, channel profile, road crossings and hydraulic infrastructure (e.g. culverts) along the lower reach of the

Speightstown channel. This consultancy will be funded through the generous support of the American people and implemented under the ‘Strengthening Disaster and Climate Resilience in the Eastern and Southern Caribbean (SDCR) Project’.

2. ABOUT THE CARIBBEAN INSTITUTE FOR METEOROLOGY AND HYDROLOGY

2.01 The CIMH is an Institution of the Caribbean Community and the technical Organ of the Caribbean Meteorological Organisation (CMO). The mandate of the CIMH is to assist in improving and developing the meteorological and hydrological services as well as, providing the awareness of the benefits of meteorology and hydrology for the economic well-being of the sixteen (16) CMO Member States. This is achieved through training, research, investigations, and the provision of related specialised services and advice.

2.02 In achieving its mandate, the CIMH established an affiliation with the UWI in 1973 where its primary responsibility is the delivery of the Bachelor of Science Programme in Meteorology in the Faculty of Science and Technology. The CIMH is also recognised by the World Meteorological Organisation (WMO) as: (i) the Regional Training Centre in the Caribbean for meteorology and hydrology and related disciplines; (ii) a Regional Instrument Centre for the Caribbean; (iii) Centre of Excellence in Satellite Meteorology Training; (iv) the Regional Climate Centre for the Caribbean; and (v) a Pan American Centre for Sand and Dust Storm Warning Alerting and Assessment System node.

2.03 In recent years, the CIMH has become a Caribbean Centre for Climate and Environmental Simulations. In addition, the CIMH is a Climate Data Centre for CMO Member States. The Institute is also an important Caribbean Centre for research and development related to meteorology, hydrology, applied meteorology (including agro-meteorology), climate and their applications in the Caribbean. It is active in such areas of hydrological risk impacts forecasting and agricultural risks forecasting and has strong collaborations with other regional institutions, national organisations in CMO Member States and the international community.

2.04 Currently CIMH is implementing the Strengthening Disaster and Climate Resilience in the Eastern and Southern (SDCR) Project, which is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The SDCR Project will contribute to building the resilience of the region through a series of small but effective initiatives that extend several areas of work started by the CIMH. Equally as important, the work being proposed introduces innovative activities that are unrelated to previous activities executed by CIMH and the region. The SDCR Project will (i) strengthen hydro-meteorological observation platforms; (ii) strengthen the human capacity and institutional resilience of National Meteorological and Hydrological Services (NMHSs) in the Caribbean to enable them to maintain some level of functionality under the most arduous conditions; (iii) strengthen multi-hazard early warning systems in the Caribbean by enhancing the timely collection and integration of pre- and post-impact data into regional multi-hazard impact-forecasting and decision-support platforms that improve risk forecasting, management and reduction and (iv) further strengthen and expand the development and delivery of climate services in the Caribbean.

3. OBJECTIVES

3.01 The primary objective of this consultancy is to:

- (a) perform a systematic survey of individual building structures located in the Speightstown watershed in Barbados, within the geographical study area predefined by the CIMH
- (b) survey the lower reach of the Speightstown channel in Barbados as defined by the CIMH inclusive of channel banks, road crossings and hydraulic infrastructure (e.g. culverts)

4. SCOPE OF WORK

4.01 Specific duties and responsibilities of the Consultant shall include:

- (a) a systematic survey of individual building structures located in the Speightstown watershed within the geographical study area predefined (Reference Appendix 1) by the CIMH to collect details on the following building characteristics:
 - (i) Roof Types (i.e. the type of roofing materials observed)
 - (ii) Wall Types (i.e. the type of wall materials observed)
 - (iii) Building Usage (i.e. the category of building usage observed)
 - (iv) Building Levels (i.e. the number of floors/storeys observed)
 - (v) General Description (i.e. any additional and relevant descriptive property details)
 - (vi) Replacement Cost (i.e. an estimation of the replacement cost of the main property structure as determined by prevailing market standards)
- (b) the development of a Geographical Information Systems (GIS) compatible dataset (in shapefile format) that illustrates the building footprint locations (relative to the defined study area) of the individual surveyed properties. An initial building footprint shapefile will be provided by the CIMH. The established dataset must reflect the following attribute names, values, and data types:

Table 1 - Descriptors for building attributes

Attribute Name	Description	Predefined Values	Value Data Types
ID	A unique identifier for a surveyed property	n/a	Numeric (Integer Values)
Roof_Type	A categorisation of observed roofing materials	Tiled, Perma-Clad Steel, Corrugated Galvanized, Solar Panelled, Wooden and Other	String (Text)
Wall_Type	A categorisation of observed wall materials	Stone, Wood, Fibre Cement Board, Cement Blocks and Other	String (Text)



Usage	A categorisation of observed building usage	Residential - Multi Family, Residential - Single Family, Generic Commercial, Commercial & Residential, Retail Trade, Government/Public, Bank, Day Care/Nursery, Primary School, Secondary School, Hospital, Medical Point, Generic Medical, Entertainment/Recreation, Temporary Lodging and Other	String (Text)
Levels	A description of the number of floors/storeys observed	n/a	Numeric (Integer Values)
General	A general description of the structure which may also include details on attribute values listed as "Other"	n/a	String (Text)
Repl_Cost	An estimate of the cost to replace the main property structure as guided by prevailing market standards	n/a	Numeric (Floating Point Values)

- (c) a survey of the lower reach of the Speightstown watercourse as defined within the study area including channel cross-sections at a minimum 2m spacing, profile, invert levels, road crossings, hydraulic structures and bed condition
- (d) the delivery of channel characteristic survey data in a standard GIS format and labelled drawings. Cross-section data should be presented from left to right looking downstream and must include channel banks and the immediate floodplain area. Cross-section and profile data should be included in a text file and adequately labelled for cross-referencing

5. DELIVERABLES

5.01 The Consultant will deliver:

- (a) building survey results inclusive of a shapefile with attributes including the data collected during the survey of the individual building structures;
- (b) channel survey results inclusive of labelled drawings and GIS files showing layout and profile of the watercourse in addition to surveyed cross-sections, bridges and culverts inclusive of invert levels, banks and immediate floodplain levels;
- (c) draft report documenting work completed;

(d) final report

6. DURATION

6.01. It is expected that the scope of work will be completed within two (2) months.

7. REQUEST FOR PROPOSAL

7.01 The CIMH invites applicants for the Consultancy to submit a full proposal that includes the following elements:

- (a) The Technical Proposal:
 - (i) The Methodology/Approach detailing the proposed use of your expertise, experience, and other resources and innovations to achieve the objectives and deliverables of this consultancy;
 - (ii) Detailed Work Schedule inclusive of personnel assigned and the level of effort required for each task; (Reference Templates in Appendix 2 &3); and
 - (iii) Curriculum Vitae (CV for each key team member)

- (b) The Costing/Financial Proposal:

The Consultant is required to submit a financial proposal which details the cost categorized into two broad areas - Professional Fees and Billable Expenses. **The ceiling contract price (all cost included) is USD 7,500.00**

 - (i) Detailed professional fees against each task and level of effort per team member as presented in the detailed works schedule at 1 (ii) (Reference Annex 4) and
 - (ii) Other billable expenses (e.g. travel, administrative cost) relevant to the undertaking of the Consultancy.

7.02 Deadline for Submission of the Proposal

Submissions in PDF format must be e-mailed to sdc@cimh.edu.bb on or before **September 22, 2020**. All inquiries for information regarding this solicitation should be directed to the e-mail address above.

7.03 Evaluation Process

The proposal will be evaluated using the following criteria:

Table 2 - Evaluation criteria

EVALUATION CRITERIA	IMPORTANCE
Demonstrable relevance and complementary strengths of consultant team proposed	25%
Experience regarding the completion of building surveys and watercourse surveys	50%
Experience using standard GIS software packages	15%
Demonstrable past experience in delivery of similar work.	10%

APPENDICES- MAPS & TEMPLATE TABLES

APPENDIX 1- MAPS

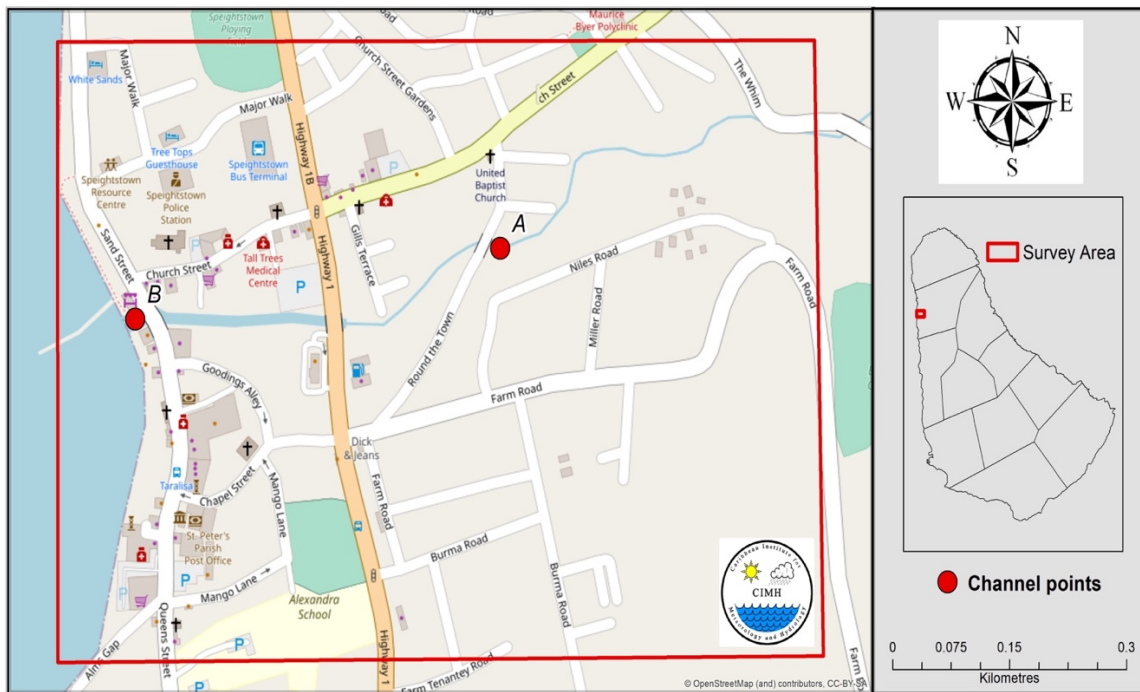


Figure 1 - Street map showing area of interest for building characteristics survey. Length of channel to be surveyed shown as AB

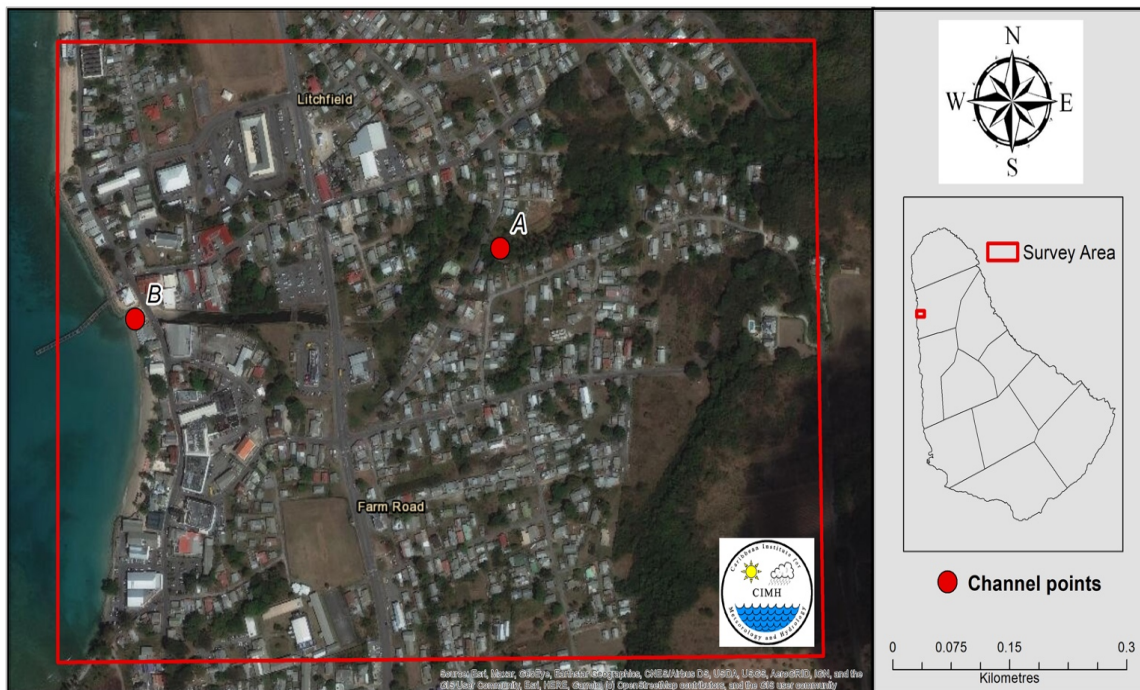


Figure 2 – Satellite image map showing area of interest for building characteristics survey. Length of channel to be surveyed shown as AB

APPENDIX 2- Work Schedule Template Table: Level of Effort

Work Schedule Template Table: Level of Effort

Tasks	Team				Total (Man Days)	Timeline
	Team Member 1 (Man Days)	Team Member 2 (Man Days)	Team Member 3 (Man Days)	Team Member 4 (Man Days)		
Broad Task 1						
Sub-task 1.1						Start Month – End Month
Sub-task 1.2						Start Month – End Month
Sub-task 1.3						Start Month – End Month
Broad Task 2						
Sub-task 2.1						Start Month – End Month
Sub-task 2.2						Start Month – End Month
Sub-task 2.3						Start Month – End Month
Total						

APPENDIX 3: Work Schedule Template Table: Timeline/Work Plan

Work Schedule Template Table: Timelines/Work Plan

	Month 1		Month 2		Month 3		Month 4		Month 5		Month 6	
	Weeks											
	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4
Broad Task 1												
Sub-task 1.1												
Sub-task 1.2												
Sub-task 1.3												
Broad Task 2												
Sub-task 2.1												
Sub-task 2.2												
Sub-task 2.3												
Total												

APPENDIX 4- Template Table for Professional Fees

Template Table for Professional Fees

Tasks	Team				Total (USD)
	Team Member 1 (USD)	Team Member 2 (USD)	Team Member 3 (USD)	Team Member 4 (USD)	
Broad Task 1					
Sub-task 1.1	# of days x Daily Rate	# of days x Daily Rate	# of days x Daily Rate	# of days x Daily Rate	
Sub-task 1.2					
Sub-task 1.3					
Broad Task 2					
Sub-task 2.1					
Sub-task 2.2					
Sub-task 2.3					
Total					