

**Jamaica Disaster Vulnerability Reduction Project
(DVRP)**

TERMS OF REFERENCE

**Consulting Services for the Development
and Training of Jamaica's National Risk
Information Platform (NRIP)**

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1. BACKGROUND INFORMATION

1.1. BENEFICIARY COUNTRY

Jamaica

1.2. BACKGROUND

The Jamaica Social Investment Fund (JSIF) is a limited liability company incorporated under The Company's Act of Jamaica. It was established in 1996 as a component of the Government of Jamaica's (GoJ's) national poverty alleviation strategy. The Fund was designed primarily to channel resources to small-scaled community-based projects. This is done with the use of an Operations Manual that acts as a guide to ensure transparency, accountability and efficiency in project implementation.

The operations of the JSIF were initially funded by a loan negotiated between the GoJ and the World Bank. Though the Fund was initially established as a temporary organization with an initial lifespan of four (4) years, it has been in operation for over twenty-one (21) years; invested an estimated USD 200 million, of which approximately 80% is on infrastructure. Presently the Fund has been charged with executing agreements with international donor partners that will continue until 2022.

The mandate of the JSIF is:

The Jamaica Social Investment Fund (JSIF) mobilizes resources and channels these to community-based socio-economic infrastructure and social services projects. Through a national partnership between central and local government, communities and private and public organizations, the JSIF addresses the immediate demands of communities in a manner that is quick, efficient, effective, transparent and non-partisan.

1.3. JAMAICA DISASTER VULNERABILITY REDUCTION PROJECT (JDVRP)

JSIF is in the process of implementing several development programmes from varying funding agencies, targeted at underserved urban and rural communities.

The DVRP is being financed by the Government of Jamaica with a loan of US \$30 million from the World Bank. The project is being implemented over a six-year period (July 2016 – July 2022). The DVRP supports the GoJ in implementing a program that promotes climate and disaster risk management in the wider context of sustainable development. This will be achieved through: i) improving the capacity of Government institutions to

generate and use hazard and risk information to shape local and national development; and, ii) reducing disaster and climate vulnerability by making infrastructure more resilient.

The Project will support the Government to proactively address disaster risk, rather than treating a disaster as an exogenous shock to development. The Project will also, in the event of a major disaster triggered by a natural event, enable a quicker response to address emergency needs and thus reduce the risk of the GOJ having to halt or divert resources from the implementation of the other development priorities.

There are four primary components. These are Component 1 – Understanding Risk; Component 2 - Risk Reduction; Component 3 - Contingent Emergency Response; and Component 4 - Project Administration. Complementary activities will be carried out through grant financing that will complement the Loan activities. These activities are related to i) disaster risk financing and insurance; ii) disaster response and recovery; iii) safer schools; and iv) risk reduction.

The DVRP is executed by the JSIF alongside many partners in Government. These include the National Environment and Planning Agency (NEPA), Office of Disaster Preparedness and Emergency Management (ODPEM), Jamaica Fire Brigade (JFB), National Works Agency (NWA), Earthquake Unit (EQU) of the University of the West Indies (UWI) and the Ministry of Education, Youth and Information (MOEYI).

1.4. RATIONALE FOR A NATIONAL RISK INFORMATION PLATFORM (NRIP)

The National Risk Information Platform (NRIP) is an important output that will serve as a tool towards fulfilling the objectives under the Disaster Vulnerability Reduction Project (DVRP). This platform is intended to facilitate the coordination of stakeholders and custodians of data and provide a solution to issues related to:

- data and information sharing
- limited access to data and
- limited access to timely/current and accurate data and associated metadata.

As a multi-hazard risk information platform, a wide representation of risks and vulnerability will be spatially mapped and identified within a single system. The aim being to have data available for the making of development decisions and the appropriate consideration of risk and climate change information.

With improved ease of access to data and information, there will be an increased awareness of potential hazards, areas of vulnerability and exposure. In so doing, emphasis can be placed on employing measures of safety and risk reduction. The various integrated tools/modules will

encourage analysis and research that can be area-specific, hazard-specific as well as comprehensive in scope. Data and information obtained from this platform would be useful for national and localized land, coastal and offshore planning and management of resources and aid decision-making activities.

1.5. ABOUT THE RISK INFORMATION PLATFORM

Component 1 of the DVRP project includes the development of a National Risk Information Platform (NRIP) where all of Jamaica's risk data can be located and updated in a centralized platform accessible to Government agencies and the public. The NRIP will require hardware, software and human resources to implement a stable and efficient infrastructure and further, the development of a robust system that is scalable and able to satisfy the needs of all the stakeholders. The Concept Document for the National Risk Information Platform for Jamaica, outlines the following as targeted users of the NRIP:

- Both levels of government, Local and Central in collaboratively planning and implementing mitigation measures including warning systems
- Local Authorities for land use planning and mitigation works
- Public officials involved in developing regulations, taking enforcement actions, performing risk assessments, evaluating investments, approving developments, etc.
- Risk researchers and practitioners
- Individuals or organisations that are subject to hazard-related regulations/activities
- Property developers, their architects and planners to make their own limited assessments of risks, and to ensure their designs comply with council regulations and take advantage of environmental benefits (protection services, fisheries, recreational areas)
- Emergency Services in order to plan for situations that may arise before, during and after the onset of a hazard.
- Insurers as an input to risk assessment and pricing
- Homeowners, renters and business owners making decisions around where to live or operate a business, and how to manage their exposure and vulnerability to existing hazards
- Lending/ Mortgage institutions to assist them to value properties that are subject to mortgage; and

- Public and private organisations providing economic infrastructure (for example; water, electricity and transport services) and other community infrastructure like hospitals and nursing homes.

Through creating a platform for Government agencies to share risk information and a quantitative baseline against which to track progress, the platform will be integrated into the national policy framework for the country. The NRIP will function alongside and in the context of instruments such as the National Development Plan and will assist in facilitating a strategic risk reduction approach led by the GOJ and incorporating broader national stakeholders – including the business community and civil society.

The Coastal Risk Atlas (CRA) will be integrated as a part of the NRIP, providing data and tools to support improved decision-making and planning of coastal resilience measures.

The NRIP is conceptualized as a Platform that allows users to visualize and download data relating to hazards; social, ecological, physical and economic vulnerability and loss from natural and technological hazards. The users' experience will be enhanced through their ability to visualize and interact with hazard, vulnerability and risk data through a series of map layers that can be activated and deactivated based on scenarios or analysis that the user wants to perform. Each map layer will have supporting attribute data including links to detailed information on hazards, vulnerability and losses contained in tables, photographs and reports that provide added information for analyses for specific locations.

In addition to the map feature, an NRIP module will include a community of practice that will operate as a discussion forum for DRM and Climate Change Specialists and practitioners to share views, discuss ideas and concepts and share recommendations of best practices that benefit the sector.

The purpose of the platform is to promote a culture of safety and risk reduction by providing access to knowledge and information on hazard, vulnerability, exposure and loss and making it available to be utilized to support decision-making in development and land use planning, investments in social, economic and environmental sectors and risk transfer strategies. The platform will also support risk reduction of future losses.

The platform will be managed by Jamaica's national disaster office, the Office of Disaster Preparedness and Emergency Management (ODPEM) while hosting will be by the National Spatial Data Management Division (NSDMD), a division of the Ministry of Economic Growth and Job Creation (MEGJC). NEPA is also a key stakeholder as the Coastal Risk Atlas falls under their purview.

The NRIP was conceptualized in response to the absence of a central clearinghouse for disaster risk data leading to a fragmented and ad hoc approach to the collection, storage and access to risk data. A comprehensive NRIP will integrate existing related initiatives, providing a central Platform for stakeholders requiring risk information.

The model proposed for NRIP will see several agencies who generate risk data being able to maintain autonomy over their data and will be given access to upload data directly to the platform without transferring the data to a third party. These agencies and access points are referred to as data sources.

2. OBJECTIVE

To strengthen Jamaica's culture of safety and risk reduction by improving access to the country's information on hazard, vulnerability and risk, making it more readily available for use in development decisions.

The specific objective of this Consultancy is to provide a modern open source platform for interaction and sharing of multi-hazard risk data among diverse users, engaging national stakeholders in the process.

3. SCOPE OF THE WORK

Note: The services delivered through the TOR are to be undertaken in accordance with generally accepted international standards and professional practices acceptable to the Government of Jamaica and the World Bank. The scope of work is understood to cover all activities necessary to accomplish the objectives of the Consultancy, whether or not a specific activity is cited in these Terms of Reference (ToR).

- **General Scope:**

- Develop a thorough knowledge of the “Concept for the Development of a National Disaster Risk Information Platform” for Jamaica to gain an understanding of the objectives of the platform, content, key stakeholders and the concept for the design, implementation and use;
- Consult other available literature and other risk information platforms developed worldwide to understand the existing and potential challenges with risk information collection in Jamaica;
- Develop knowledge of the DVRP project, specifically project objectives, components, stakeholders, activities and target groups;
- Develop a thorough knowledge of related trust fund projects being implemented by the world Bank and complementary to the DVRP e.g. (Global Facility for Disaster Risk Reduction and Recovery (GFDRR), Program on Forests (PROFOR), Pilot Programme for Climate Resilience (PPCR)) and compile a comprehensive list of data outputs from the trust fund operations and other current projects underway that are relevant to the platform.

- Design and refine the NRIP's architectural design for appropriate scalability, interoperability and functionality determined by identified user and system requirements;
- Develop an inventory of existing data sets that are available to be uploaded and published on the platform. This should be done with assistance in coordination of stakeholders, by the NSDMD which serves as the secretariat for the Land Information Council of Jamaica (LICJ) of which custodians and contributors of spatial data in the island are members.
- Assess the data processing that may be required to adapt existing risk information data to the format specified in/required for the platform;
- Develop and implement the open source platform using the agreed upon design that the consultant would have created after conducting assessments and meetings with stakeholders.
- Create technical system and user documentation as stipulated in tasks and deliverables.
- Using the NSDMD's data-sharing agreement as a template; make arrangements for the sharing, transfer and upload of data from data sources/owners to the platform;
- Identify any challenges related to the sharing or transfer of data and recommend solutions to acquire the data;

3.1. TASK 1: DEVELOP THE USER AND SYSTEM REQUIREMENTS FOR NRIP INCLUDING COASTAL RISK ATLAS

The Consultant will liaise with the ODPEM and the NSDMD to undertake a User Needs Assessment leading to the system requirements for the platform. The assessment will target national stakeholders and will require that the Consultant:

- **Identify the end-users of disaster risk data in Jamaica, from the target users stated within the concept document. Determine user accessibility of target groups/end-users to the respective data required.**
- **Identify the platform's functional requirements as determined by end-users for decision making, inclusive of but not limited to:**
 - Links to load information from other platforms
 - Interconnectivity between platform and existing user systems
 - Create and store data including a geospatial database management system
 - Output as spreadsheets (CSV), map, shapefiles etc.
 - Perform calculations and run modules and tools based on formulae obtained from end-users and produce the desired outputs
 - The type, format, timeliness and quality of risk datasets and end products required
 - Identify and include access to attribute data required for each dataset

along with associated metadata

- **Determine the non-functional requirements from end users with regards to;**
 - Recoverability of tasks conducted on the platform in case of any disruptions (e.g. power outage)
 - Capacity – temporary storage, database storage for platform etc.
 - Expected reliability and availability of platform to be operational
 - Security and regulatory requirements for end-users, particularly user access/restrictions.
 - Data integrity including policies and preventative procedures to be in place.
 - Usability and interoperability to suit users' needs to be incorporated in current work activities.
- **Identify user interface requirements and functionalities, especially outputs for decision-making.**
- **Identify and define tools to manipulate the data on the platform such as; search and discover features, query builders and tool boxes.**
- **Integrate modules and tools of the Coastal Risk Atlas identified from Task 1 and in the Concept for National Risk Information Portal for Jamaica. These include but are not limited to;**
 - Coastal Risk Atlas
 - Ecological Sensitivity Tool
 - Coastal Restoration Tool
 - Community Planning Tool
 - Social Vulnerability Model

Some expected model outputs include but are not limited to:

- Ecological Adaptive Capacity Index
- Ecological Sensitivity Index
- Adaptive Capacity Index
- Exposure Index
- Social Vulnerability Index

These tools should include but not be limited to tools to transform the “Coastal Management and Beach Restoration Guidelines – Recommendations for the Development of a Web-based Tool” into a dynamic web-based instrument and tools to support ecosystems analysis such as nature-based risk reduction tools, ecological sensitivity and coastal restoration tools etc.

- **Ensure that NRIP can interface with existing regional and local platforms or portals where relevant.** The Consultant will also facilitate Jamaica's risk data from two global platforms, DesInventar and Pacific Disaster Centre (Disaster aware) and any other relevant source identified, being seamlessly linked or transferred to the NRIP.

- **Identify and prepare a gap assessment of data, human, hardware, software, institutional readiness and other resources required by key stakeholders identified in the stakeholder analysis to successfully establish and sustain the platform.** The gap assessment should identify strategic and operational recommendations for capacity building that would address the identified gaps, during and after the establishment of the platform. The key stakeholders are expected to include The Disaster Risk Reduction Centre (DRRC), National Environment and Planning Agency (NEPA), Mines and Geology Division (MGD), Water Resources Authority (WRA), National Meteorological Service, Planning Institute of Jamaica (PIOJ), Office of Disaster Preparedness and Emergency Management (ODPEM), National Works Agency (NWA), Earthquake Unit (EQU), National Land Agency (NLA), Statistical Institute of Jamaica (STATIN), Climate Change Division (CCD) and Municipal Authorities.
- **Provide specifications for the procurement of new hardware and software and upgrade of existing hardware and software or other resources or materials required for the establishment of the platform.**
- **Identify any short-comings in the extent to which the data requirements are being met and proposed system requirements**
 - Propose how the data needs can be met, distinguishing those that can be met by the platform (include this in Gap Analysis)
- **Provide recommendations on how to enhance data sharing between agencies.**
- **In consultation with stakeholders, the Consultant will recommend the priority resources and capacities that should be implemented for the deployment of NRIP and where they should be located.**

3.2. TASK 2: DESIGN, DEVELOP AND DEPLOY THE PLATFORM

The Consulting Firm will make presentations to stakeholders as required to seek feedback and finalize the system design and functional graphic user interface.

- **Develop and ensure functionality of user-interface components as identified from needs assessment in Task 1.**
- **Design and create diagrams to describe the information structures in the platform as well as the communication with its users to propose options for implementation.**
 - Diagrams include; Wireframes, storyboards, structural and behavioural Unified Modelling Language (UML)

- **Develop, integrate and ensure functionality of modules and tools identified in Task 1 for the designated end-user, based on the end-users' requirements and with respective user access restrictions.**
- **Develop and ensure functionality of tools to monitor the use of the platform and provide user feedback. These include but are not limited to;**
 - Receive user queries, comment and other feedback for custodians or system managers;
 - Send alerts in the form of system messages or email, (for example for requests to custodians of data, queries and comments from users);
 - Security tools with necessary warning or error popup messages to avoid incorrect inputs which may cause the platform to crash;
 - Track and report changes to inputs;
 - Monitor and track platform usage and trends in operations and system runtime and periods of failure.
- **Design and perform tests on the platform including white box testing (backend of platform), and black box testing (frontend of platform) to ensure functionality.**
 - White box testing should include Unit and Integrated Testing of system modules and the overall functionality of platform and interoperability with existing systems (as stated in Task 1) based on agreed-upon design.
 - Black box testing should include System and Acceptance Testing with representation from all target groups/end-users to ensure user needs are met as identified in Task 1.
- **Implement the design agreed upon as an integrated open source platform.**
- **Establish levels of user access/restrictions within platform as identified in Task 1.**
- **Develop a list of system roles and responsibilities.**
- **Oversee the successful upload of all data required and provide documentation for replicability.**
- **Develop a training plan and material including training manual with relevant exercises.**
- **In collaboration with stakeholders, test and deploy NRIP.**
- **Undertake regional training across the island in the use of the platform for end-users.**

- **Develop training material and submit draft and final material prior to trainings.**
- **Versions of the platform, associated drafts of manuals, tests and other documentation are to be provided as required under the supervision of JSIF.** This is in recognition of the iterative process of software and product development of which the specific objective of this project states. Section 6.1 provides the deadline for the submission of the final product and documentation after changes are made as requested in order to receive payment.
- **A successful platform will be determined by the positive results of a User Satisfaction Assessment and the User Acceptance Test.** The data collection forms for the assessment and the test are to be submitted to JSIF for approval. The approved forms will be administered to the respective participating users.

3.3. TASK 3: DATA CONVERSION

- **From the data sources identified in task 1, the Consultant will identify and convert a list of data into digital formats.** This will include but not limited to paper-based maps, hard copy tables and text documents and reports, or other data that is not in the appropriate data format. As far as possible, data should be converted into a geospatial form.
- **Identify and perform transformation of coordinate systems, and/or conversion of data formats on existing spatial datasets to meet requirements of input on the platform.**
- **Create metadata for the converted data and update metadata for existing spatial data where this is incomplete.** The NSDMD metadata guideline should be used as a guide.
- **Upload, or facilitate the upload of the converted data to the platform.**
- **Provide a complete geodatabase with associated metadata for each dataset.**
- **In consultation with data sources, develop data standards for data uploaded to the platform including periods for updating, and data processing required for transforming available and newly collected data into the format required by the platform.**

3.4. TASK 4: DEVELOP TECHNICAL AND USER MANUALS

- **Use/content management policies and standards**
 - Include Data standards for inputs to the platform created in Task 1
 - Provide procedures for interaction with and use of data and custodians of the data.
 - Include information, disclaimers and guidelines based on relevant MoUs, policies, data sharing agreements and roles related to the inputs and manipulation of output data from the NRIP.
- **NRIP Technical Manual**
 - Outline data file types, formats and quality requirements for all inputs with respect to the platform modules/tools and updating procedures.
 - Include information on the basic technical requirements for hardware and software for potential users to access the full capabilities of the platform as intended for their access.
 - Provide a section for troubleshooting to resolve issues identified from the white box and black box test reports and user training conducted.
- **NRIP User Manual**
 - Develop an operational manual of the NRIP with specific roles, data sharing agreements, updating procedures etc.
 - Provide illustrated instructions to navigate users through the platform.
 - Include tips and instructions to use the various modules to avoid challenges in comprehension observed from System and User testing and training feedback.

Drafts of all documentation will be required as guided under the supervision of the partners, ODPEM and NSDMD and including the JSIF. Section 6.1 provides the timeline for the submission and acceptance of final documentation.

3.5. TASK 5: SUSTAINABILITY OF THE PLATFORM

- **Undertake training of key stakeholders in the use and maintenance of the Platform. This should include stakeholders with responsibilities to upload data to the platform, maintain the platform and update the platform after implementation.**
- **Undertake knowledge transfer to select stakeholders identified during the design and development phases of the platform.**
- **Participate in awareness-raising activities about the NRIP during design, development and deployment where required.**

- **Provide maintenance support as part of contractual deliverable to ensure platform and system is working properly.**
- **Develop a sustainability plan and maintenance policy for the platform.**
 - Include recommendations for future software upgrades after project implementation – defined periodically or otherwise
- **Submit all source codes to JSIF related to the development and final implemented platform and associated software.**
- **Develop a Training Plan and Trainer of Trainers (TOT) manual for end-user training.**
- **Develop Fee and Cost structure for maintenance of the platform.**

4. PROJECT MANAGEMENT

4.1. REPORTING ARRANGEMENTS

The Consultant will be interfacing with several stakeholders nationally and locally to adequately fulfil the objectives of the ToR. Prior to project start, the Consultant will be invited to participate in an inception meeting to be held with JSIF, ODPEM, NSDMD and other key agencies.

On contractual or other matters, the consultant will report to the Managing Director, JSIF, or designate. The Consultant should request problem solving meetings as soon as there is any indication of a variation in the scope of work or changes in the timeline. No variations are to be made to the agreed time or cost without the prior approval of JSIF.

A project manager/team lead should be identified by the Consultant who will interface with the Senior Director, Mitigation Planning and Research Division at the ODPEM and a representative of the NSDMD for day-to-day matters such as technical matters relating to the methodology, outputs and technical guidance.

4.2. SUBMISSION AND APPROVAL OF OUTPUTS

All deliverables are to be submitted to ODPEM and JSIF who will convene a meeting of the relevant technical working group of the DVRP Steering Committee, to review the deliverables and provide comments. Draft submissions

4.3. SUPPORT TO BE PROVIDED TO CONSULTANT

NSDMD will:

- Provide a list of stakeholders with whom the Consultant should consult in the development of the end-user requirements and system requirements.
- Appoint a focal point who will interface with the Consultant during the execution of the assignment.
- Allow access to its hardware, software and databases to facilitate analysis required for the design, development, testing and deployment of NRIP.
- Provide support for the deployment of NRIP.

ODPEM will:

- Appoint a focal point who will interface with the Consultant during the execution of the assignment on a day-to-day basis.
- Allow access to its hardware, software and databases to facilitate any analysis or interfacing required for the design, development, testing and deployment of NRIP.
- Provide office facilities for up to two members of the consulting team at any one point in time during the execution of the assignment.

5. LOGISTICS AND TIMING

5.1. COMMENCEMENT DATE & PERIOD OF EXECUTION

The intended commencement date is April 1, 2019 and the period of execution of the contract is twenty-four (24) months.

5.2. DELIVERABLES AND PAYMENT

Payment will be made in accordance with the submission and acceptance of the deliverables as outlined below:

Deliverables		Date to be Delivered	Payment
1	Inception Report detailing the workplan and methodology, risks and risk mitigation strategies, and any necessary literature reviewed; including a Stakeholder Engagement Plan and Training Plan.	Within 1 month after signing of contract	5%

Deliverables		Date to be Delivered	Payment
2	<p>Platform Requirements Report</p> <p>End-user and systems requirements report with Gap Analysis (software, data & hardware) – One hard and one soft copy; and Stakeholder Consultation report - This must include a soft copy and original hard copy register of participants</p>	Within (2) months after deliverable 1	10%
3	<p>Platform Design</p> <p>System, User Interface and Database design – One hard copy and one soft copy; with GIS/Data files and metadata in shapefile format (geodatabases); include reports, tables and other converted data in appropriate digital file formats for platform - in soft copy</p> <p>Draft User Satisfaction Test Survey and User Acceptance Test and Training Evaluation Survey- A soft copy submission for review and approval.</p>	<p>Within three (3) months after deliverable 2</p> <p>Provide amendments within one (1) month of feedback.</p>	<p>15%</p> <p>To be paid in two (2) equal tranches subsequent to submission</p>
4	<p>Development, Testing and Database</p> <p>Demo version of platform application presented and execution of tests. Test scenarios and results – soft copy</p> <p>Final User Satisfaction Survey and User Acceptance Test (UAT) - soft copy submission for approval.</p>	Three (3) months after deliverable 3	<p>25%</p> <p>To be paid in two (2) equal tranches subsequent to submission</p>
	<p>Completed platform and deployment (corrected after prior iterations of platform development including a demo)</p> <p>Execution of tests and successful User Acceptance Test and User Satisfaction Survey reports – hard and soft copy;</p>	Six (6) months after deliverable 3	

Deliverables		Date to be Delivered	Payment
	Submission of Submission of drafts for training manuals and related materials, technical and user manuals are required with platform, before training is conducted.		
5	<p>Training</p> <p>Completed Training manuals & execution of trainings with at representation from each target group. Training Reports - These reports must include a copy or original register of participants and must be submitted with one electronic and one hard copy format.</p>	<p>Final Training material within two (2) weeks of receipt of feedback.</p> <p>Execution of Training and reports completed within two (2) months after deliverable 4.</p> <p>Reports should be submitted within 5 (5) days of training.</p>	10%
6	<p>Technical and User Manuals</p> <p>NRIP Technical & User Manuals; and Use/content management policy and standards (Final versions after correction of prior submission of drafts)</p> <p>Draft submission of proposed fee and cost structure for maintenance of platform.</p>	<p>Within one (1) months after completion of deliverable 5.</p>	10%
7	<p>Maintenance and Support – The firm will provide maintenance and support services after implementation. A report providing information on the resolution of requests, errors, queries and concerns stated by users is required at the end of this period.</p> <p>Submission of Final Documentation of Fee and Cost structure for maintenance of platform.</p>	<p>6 months after platform implementation, deliverables</p>	10%

Deliverables		Date to be Delivered	Payment
8	Final Consultancy Report – This report should include a description of key outputs and activities, associated challenges and risk mitigation strategies, lessons learnt, recommendations and any unintended outcomes if applicable. Final Source codes must be submitted for software documentation.	1 month after deliverable 6	15%
TOTAL NUMBER OF MONTHS		*23 months	

**additional one (1) month for iterations and reviews on content.*

5.3. QUALIFICATIONS

Requirements of the Consultant Firm

- The Firm shall have a cadre of consultants trained and experience in developing websites, web application design and development, database development, and other open-source platforms, GIS database and analysis, training and maintenance, and other relevant fields.
- The Firm should be operating for at least 10 years having undertaken similar or other projects locally, and regionally; international experience is a plus.
- Strong project management skills
- Good understanding of Disaster Vulnerability and Risk Reduction, and the use of geospatial datasets for analysis and decision-making.
- Knowledge of the operations of international organizations, exposure to World Bank project policies would be a distinct advantage.

The consulting firm is expected to have the following key experts

1. Project Manager

The Project Manager must have training in Project Management, with Professional (PMP) Certification being an asset. A minimum of 8 years' experience in supervising or managing local and regional projects is required, with excellent documentation skills. Working knowledge of the software development life cycle and processes is critical, and knowledge of GIS applications in Disaster Risk Vulnerability and related topics would be a plus.

2. Disaster Risk Management Specialist

The DRM Specialist must have at least an MSc in Climate Science/Disaster Management or related discipline and at least 8 years' experience in climate change adaptation or risk reduction. This expert should be familiar with the DRM sector in the Caribbean, have sound knowledge of GIS, sound knowledge of the development or use of hazard, vulnerability, exposure, and risk data, experience developing risk profiles and conducting DRR related research.

3. Systems Analyst/Developer

The Systems Analyst/Developer must have at least 5 years' experience analyzing systems requirements; undertaking spatial platform design and development, programming, implementing and testing IT solutions with at least a Bachelors in MIS OR Computer Science OR Information Technology.

4. GIS Programmer/Analyst

The GIS Analyst must have at least a Bachelor's Degree in GIS, geography, computer science, engineering, planning, natural resources or related field; and a minimum of 5 years' experience, extensive knowledge and experience with GIS techniques, technology, and principles, GIS analysis, application design, development, and testing of GIS software, hardware, and geospatial data management systems.

5. Web/User Interface Designer

This expert must have at least have a Bachelor's Degree in Computer Technology, website or user interface design with a minimum of 4 years' experience in designing web-page layouts and determining technical requirements for user-friendly interfaces.

6. APPENDIX

LAND INFORMATION COUNCIL OF JAMAICA

METADATA GUIDELINES



Prepared by the Land Information Council of Jamaica Ministry of Land and Environment January 2006