DOMINICA ELECTRICITY SERVICES LIMITED

TERMS OF REFERENCE:

CLIMATE VULNERABILITY ASSESSMENT AND RESILIENCE PLANNING FOR THE ELECTRICITY SECTOR IN DOMINICA.

1. BACKGROUND

1.01 Dominica is located at 15°N, 61°W, occupying a central position in the eastern Caribbean archipelago. The country is bordered by the French territories of Guadeloupe and Martinique. Dominica is volcanic in origin and is characterized by very rugged and steep terrain with approximately 90 miles of coastline. The island's volcanic natural history remains evident in continuing seismic. Dominica has a forest area of 45,000 hectares, constituting more than half of the island.

1**.02** The Dominica economy reflects many of the traditional features of a small open economy. This includes a high level of dependence on external trade as a proportion of gross domestic product (GDP), dependence on single sector export products (in this case agriculture) and tourism revenue, high levels of under-employment and unemployment, and dependence on foreign capital (both public and private sector) for investment into productive sectors and for infrastructural development. Economic development, in particular, is significantly affected by both natural and external factors.

1.03 Dominica is extremely exposed to multiple natural hazards, which may occur simultaneously, ranking 12 in the Composite Vulnerability Index, produced by the Commonwealth Secretariat and the World Bank, and is impacted almost annually by tropical weather systems. "The average economic losses associated with extreme hydro-meteorological events are equivalent to roughly 7.4% of GDP. Singular events like Hurricane Dean (2007) caused extensive damage to the island, estimated at 58% of GDP, or USD162 million, with significant damages to buildings and infrastructure. More recently in 2011, record level flooding and landslides associated with heavy rain caused more than USD100 million in damage. In April 2013, heavy rains caused landslides, flooding and a 40-foot deep split in a section of the East Coast main road resulting in two deaths, and more recently in December 2013 heavy rains caused widespread damages to infrastructure and housing with damages in the range of USD20 mn."5

1.04 As recently as 2015 the country was ravaged by Tropical Storm Erika, resulting in damage amounting to over 90% of GDP. Over 15,000 persons were affected (22% of the population) 6, 1,000 people were made homeless, and nine communities were declared disaster areas, with two communities in the south of the island being abandoned. The data indicates a proportion of female-headed households amongst the affected population was high at 35% and locally as high as 47%; this suggests a higher vulnerability to shocks, greater difficulty with regard to access to

labour markets, may find themselves in the lowest wage segments of the market and most significantly carry a burden of care and the role of the main earner simultaneously. The consequence is that such heads of households suffer from more pronounced time and mobility constraints than their male counterparts. The population of these communities is in the process of being resettled by the state.

1.05 On September 18, 2017, Hurricane Maria hit Dominica with catastrophic effect. Hurricane Maria was one of the most rapidly intensifying storms in recent history, intensifying to a category 5 hurricane, roughly 24 hours after being upgraded from a tropical storm. As the hurricane passed over the center of the island, Dominica was exposed to extraordinary winds for more than three hours. This was accompanied by intense rainfall, which provoked flashfloods and landslides. The impacts of Hurricane Maria were severe for both the country's economy as well as the human development of its citizens. The Post-Disaster Needs

Assessment7 concluded that Hurricane Maria resulted in total damages of $2.51 bn (USD931 mn) and losses of $1.03 bn (USD382 mn), which amounts to 226 percent of 2016 GDP. The identified recovery needs for reconstruction and resilience interventions, incorporating the principle of 'building back better' where possible, amount to $3.69 bn (USD1.37 bn). A significant proportion of the labor force became unemployed as an immediate consequence of Maria, with estimates that the decline in the production of goods and services may continue for one to two years.

1.06 Electricity service failed due to widespread damages to the transmission and distribution network. At least 75 percent of the network is down, although part may be recoverable, 80% to 90% of the transformers inspected are badly damaged and cannot be repaired. Damages to generation sites vary from moderate to severe. Specifically, at Fond Cole there are damages to the building structures and three generation units must be inspected and repaired (enclosures were lost). Sugar Loaf also suffered some damages to the building structures and the electrical equipment (in the latter case caused by flooding).

1.07 The hydropower plant at Padu was damaged by 3 - 4 feet of mud and debris filling the powerhouse. There is visible damage to control equipment, and there may be damage to hydro mechanical equipment of the powerhouse and the electro-mechanical equipment.

1.08 The Trafalgar hydro-generation plant experienced only minor damages to the building structure, and Laudat is intact. The water pipeline feeding the three hydropower stations from Freshwater Lake suffered damage at different sections along its length. There is severe damage at the beginning of the pipeline due to landslide and rock impacts, and valves were also damaged. Severe damage is suspected due to landslide along the road from Padu to Trafalgar, affecting a 10-15m section of the pipeline. Minor damage was observed near Padu including fractured support structures and misplaced pipeline sections. This study "Climate Vulnerability Assessment and Resilience Planning for the Electricity Sector in Dominica" is financed through funds provided by the Caribbean Development Bank as part of an operation to support the rehabilitation and reconstruction of the electric system in Dominica. The objective of the operation is to restore the DOMLEC electricity system.

2. OBJECTIVES

2.01 The overall objective of this assessment is to support DOMLEC's efforts for reconstruction and rehabilitation of the electric system devastated by Hurricane Maria while strengthening the resilience of Dominica's electricity system to climate and geophysical hazards. More specifically, the study aims to achieve the following:

(i) Identify and assess the existing and potential natural hazards (climate-related and geophysical) risks to the country's electricity network, and detect critical sites for further analysis;

(ii) For selected critical sites and all DOMLEC generation sites conduct detailed vulnerability analyses and prepare measures to reduce the hazard risks and adapt to climate change. The resulting natural hazards management plan should identify and prioritize various risk reduction options. It should include preliminary designs and cost benefit (or effectiveness where relevant) analysis, suggest design standards and define climate design parameters;

(iii) Make recommendations on options to enhance the reliability and resilience of the electric system in Dominica with a time horizon of 10 years and 30 years.

2.02 The assessment is expected to cover the network and its components, namely:

(i) Electricity transmission and distribution network;

(ii) Electricity generation;

(iii) Supporting infrastructure and operational and maintenance buildings.

3. EXPECTED RESULTS

3.01 The main output from this assignment will be a detailed investment plan for the activities required to strengthen the resilience of the electricity generation and transmission assets in Dominica, as well as of all buildings used by DOMLEC. To this end, the Consultant shall conduct all the studies, analyses and field surveys required to identify critical assets, characterize main threats, define design parameters associated with extreme weather events, recommend risk reduction measures and prepare conceptual designs and costs estimates for the identified high priority adaptation measures.

3.02 The study should provide a clear assessment of the existing and projected natural hazard risks affecting the electricity infrastructure in Dominica as well as the operations of DOMLEC. Specifically, the study will provide a clear ranking of vulnerabilities associated with generation,

transmission and distribution assets. The vulnerability assessment will include, in addition to the determination of all potential climate change impacts on the assets, flood maps together with a risk matrix showing for each asset, the geotechnical hazards/risks, associated impacts and the proposed response measures. The consultant will estimate the design parameters associated with hydro meteorological phenomena, such as design maximum wind speeds, design rainfall intensity relations, etc. For selected priority sites (including all power plants and areas with highly vulnerable critical assets) identified by the consultant and agreed with DOMLEC, geotechnical surveys and stability analyses will be conducted and flood maps will be prepared with contour lines indicating flood areas for events with frequencies of one in 20 years, 50 years and 100 years for climate conditions expected by mid-century.

3.03 The consultant will also explore the climate change impacts on the ability of the generation assets to produce energy. Variations in the precipitation regime are likely to reduce the expected energy production at hydropower plants, and might also reduce energy output at sites that require cooling waters.

3.04 All geophysical hazards will also be mapped; the vulnerable assets described, impact identified and recommended risk mitigation measures proposed and summarized in a risk matrix.

3.05 The consultant should also consider any backward or forward linkages to other sectors, such as roads and emergency management.

3.06 For sites ranked as highly vulnerable and of critical importance for the provision of reliable electricity service the assessment will provide “conceptual designs” of recommended measures to mitigate the risks identified. The analysis of the recommended actions should include a detailed description, a preliminary cost-effectiveness analysis, an initial environmental assessment, and identification of potential social impacts and the elements of a program to monitor the natural hazard threatening the asset. The consultant should also provide a preliminary cost assessment and the corresponding TORs for completing the detailed designs.

3.07 The vulnerability analyses should contemplate:

(i) Existing generation and transmission and distribution network, as well as the system, expected 15 to 20 years into the future.

(ii) Past climate, as defined by available observations, reanalysis databases, and results from the application of GCMs and RCMs in the Caribbean for the observation period.

(iii) Climate scenarios for mid-century as well as for the end of the century.

(iv) Natural hazards, highlighting climate and geotechnical phenomena.

4. ACTIVITIES

4.01 To achieve the objectives and produce the desired results the consultant will conduct the following analyses: (a) a climate risk and vulnerability assessment together with the corresponding adaptation/risk management plan of actions; (b) the determination of the main design parameters to guide the design process of the selected adaptation/risk management measures; and, (c) Prepare a training program to strengthen DOMLEC's capacity to mainstream climate change considerations and respond to extreme events with the potential to impact its critical assets. It is recognized that there exists a significant number of methodologies and approaches to conducting the required studies. The consultant is free to select a logical framework and methodological approach to conducting the proposed study. The following structure and tasks are suggested to organize the expected deliverables:

Climate Risk and Vulnerability Assessment and Adaptation Plan of Action (i) System, project components, description.

4.02 The subject of the Climate Risk and Vulnerability Assessment is the existing generation, transmission, and distribution system in the island of Dominica, and the generation and transmission/distribution system expected 15-20 years into the future. The system of interest should be defined in close coordination with DOMLEC as a list as well as in maps, utilising a GIS system compatible with DOMLEC's usage and should include the characterisation of the assets. The consultant is expected to use the best available information. New LIDAR based maps are being prepared and should be used if possible.

4.03 The determination of all the elements that are part of the "system" is the responsibility of the Consultant who should provide a detailed description of each asset as a unit of analysis in the execution of the CRVA. Each element should be field surveyed, noting its condition and indicating the existing level of performance. In the case of transmission and distribution lines, the consultant is expected to define the assets by zones with a total length less than 5 km, and an area less than 2 km2.

4.04 The Consultant would focus on the selected assets assessing data availability for those assets and other essential characteristics of managing those assets. When compiling this inventory, the Consultant should also gather information that may help to evaluate how resilient the asset is to climate and to other natural stressors, and how costly damage to the asset or reductions in service could be.

4.05 The Consultant should prepare a format for the characterisation of the assets that should be reviewed with DOMLEC and the CDB, before proceeding with the data gathering campaign.

(ii) Identification of climate variables of interest

4.06 Based on the Consultant's knowledge of the energy sector in Dominica, together with an initial consultation with key stakeholders to obtain the historical record of hazard occurrence, he/she, should identify the climate variables of interest and provide a detailed characterisation of such variables based on existing observations and previous studies. Trend analysis is requested, based on the best available information.

4.07 The consultant should prepare climate change scenarios for mid-century and for the end of the century based on the best available information. National communications to the UNFCCC should guide the selection of future climate scenarios; if available nationally adopted climate scenarios should be used. The scenarios should support the characterisation of the climate variables of interest for mid-century and end of the century.

4.08 Among the climate variables of interest, the following should be included: daily precipitation; maximum (annual) daily precipitation; monthly and seasonal precipitation; daily temperatures (maximum, minimum, median); wind speeds at the highest resolution available. If possible, the climate characterisation should include the geographical distribution of the climate variables of interest in Dominica.

(iii) Climate susceptibility

Exposure

4.09 The consultant is expected to assess the level of exposure that each asset has for each natural hazard under study. For example, the preparation of flood maps, for different return periods, is a methodology to identify which assets are exposed to each level of flood risk. Similarly, exposure to high wind velocity could be assessed by applying existing guidelines8. For each asset, the consultant should prepare a matrix indicating the degree of exposure to the natural threats under consideration.

Susceptibility to damage or service interruptions.

4.10 For planning and for the identification of sites that should receive immediate attention the susceptibility (or sensitivity) should be followed by a criticality analysis. Susceptibility of the sites and assets determines the extent of damage or service interruption that can be anticipated for a given impact. Performing a criticality assessment is one way to prioritize assets for further study. It provides a structured way to identify the most valuable property that an agency might wish to

examine for vulnerability to climate change. Typically, a desk review will identify an initial list of critical assets based on commonly available data. The project team will then use the results of the desk review to inform and structure feedback from stakeholders and local experts.

(iv) Adaptive Capacity

4.11 The assessment of adaptive capacity looks at the characteristics of a system that could influence its ability to adapt to climate change. Here, the relevant considerations include information and access to adaptation technology, the institutional capacity of DOMLEC to manage the process and the ability to enforce relevant laws and regulations that affect operation of the electricity network.

4.12 The Consultant should begin with a consultation with the principal stakeholders (DOMLEC, government offices/agencies and other relevant staff from transport sector as well as communities adjoining the assets) to obtain the historical record of impacts from previous extreme events and the institutional response.

(v) Climate impact analysis

Climate Vulnerability Assessment

4.13 The combined analysis of exposure, susceptibility, criticality and adaptive capacity, will produce a vulnerability assessment. The consultant should indicate the methodology to apply indicating the mapping function to use to grade the level of vulnerability of a particular asset. The vulnerability of DOMLEC's operations would also be a part of this assessment. It is recommended to conduct workshops with the main stakeholders and DOMLEC personnel for verification or endorsement of the results.

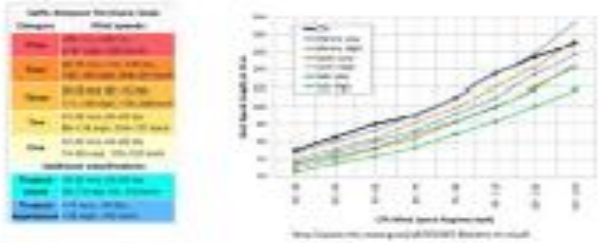
4.14 In reporting on the vulnerability assessment, the consultant will prepare for the consideration of DOMLEC a document describing the methodology followed, the information gathered, and the preliminary results obtained, summarizing them in the form of a matrix. They will also conduct a participatory process to verify the results and gain DOMLEC's endorsement of critical sites that will be the subject of further study.

Climate Risk Assessment

4.15 A more detailed quantitative vulnerability assessment, which includes economic costs and benefits, will inform the risk assessment. The consequences of the hazards, in economic and social impact terms, on the asset are weighted by the likelihood of occurrence of the hazard. The consultant may opt for a Multicriteria Analysis or a conventional cost-benefit study. This more detailed analysis is expected only for selected sites from those identified as critical (or priority) by the vulnerability analysis and endorsed by DOMLEC.

4.16 The selection of pole's specifications to withstand future extreme weather events should be subject to a cost-benefit analysis. The consultant will explore the structural requirements for poles subjected to wind speeds associated with category 5 hurricanes. A sensitivity analysis will have as starting point the

Figure 1. Hurricanes and wind speeds



maximum recorded wind speed in Dominica, or the value estimated for the sustained wind speeds for Maria, minimum 160 mph, and increase it by steps of 10 mph, until a maximum of 200 mph. The sensitivity analysis will also analyse the impact of different exposures, as per the analysis of Masters et al. (2009), summarized in figure 1. Furthermore, the consultant will utilize different return periods for category 5 hurricanes ranging from 50 years to 20 years in intervals of 5 years. Discount rates will vary from 2 percent per year to 12 percent per year. The consultant will analyse the results and provide recommendations.

4.17 The Consultant shall indicate in the proposal the additional studies that they will conduct on each site to gain a more quantitative perspective of the risk, incorporating economic and social variables. These studies should serve as the basis for the formulation of risk mitigation measures.

(vi) Assessment of Geo-physical Hazards

4.18 The Consultant will prepare a geo-hazard risk and vulnerability assessment, covering landslides, earthquakes and volcanos. The Assessment will include hazard identification and analysis with a historical review, probabilistic analysis and preparation of an inventory (and categorisation) of key elements of the network that are exposed as well as a vulnerability analysis to determine the extent to which the assets could be harmed. The assessment should comprise the following:

(i) Establishment of a baseline and identification of relevant hazards, screening and profiling of hazard events.

(ii) Preparation of hazard risks maps detailing exposure of components of the network to landslides, earthquakes and volcanoes.

(iii) A risk assessment which is a function of the probability of the hazard and the vulnerability of the components that can be affected by the hazard, including the economic costs and benefits.

(vii) Identification of resilience and adaptation measures (with emphasis on the identification, prioritisation and preliminary analysis of alternatives)

4.19 Based on the results from the general, nationwide, climate vulnerability assessment and the geo-physical risk assessment, the consultant will identify measures to increase the resilience of the system in the short (for immediate incorporation during the rehabilitation and reconstruction period) and medium term (5-10 years). The corresponding plan of actions should be drafted for each major component (transmission and distribution system, generation assets, operational and maintenance facilities, including buildings). The draft plan of action should be socialised with key stakeholders and gain DOMLEC agreement, as well as the no objection from the CDB.

4.20 Once the critical sites have been agreed, the Consultant will initiate the formulation of site-specific risk reduction measures. Actions to address those risks associated with or enhanced due to climate change will be the adaptation measures. Actions to address geo-hazard risks should also be formulated The Consultant should prepare a brief feasibility analysis for each critical site, indicating and characterising the current threats and those associated with climate condition at mid-century10, as initially identified in 1.2, 1.4.1 and 1.4.2 above. The feasibility study should describe and quantify the potential consequences of the threat; make a preliminary identification and description of the resilient measures applicable to the specific conditions identified; recommend and justify a particular course of action; prepare the functional design for the selected option; including cost estimates.

(viii) Assessment and selection of resilience and adaptation measures

4.21 In the proposal, the Consultant shall indicate the methodological approach suggested to assess the feasibility of the recommended risk mitigation measures. For each critical site, economic and financial justification should be provided. The results will be presented to and discussed with DOMLEC. Once the comments are received and have been incorporated, the site-specific feasibility report will be finalised.

(ix) (Resilience/Adaptation) Plan of Action (scheduling, budgeting)

4.22 The consultant will prepare a nationwide plan of action building resilience to the electricity system in Dominica. Also, based on the information from the feasibility reports for each critical site the Consultant will prepare a detailed plan of actions for the execution of all the recommended measures. The plan of actions will include scheduling and budgeting. As previously indicated, the Consultant will prepare the Terms of Reference for the design of the recommended resilient building measures.

(x) Monitoring and evaluation system

4.23 The implementation of a Monitoring and Evaluation System, M&E, will be important in minimising future losses due to extreme events and natural hazards in general. The Consultant shall prepare, in close coordination with DOMLEC personnel managing the critical sites, a detailed M&E plan for each key site and the generation and transmission infrastructure in general. Such plan should include:

(i) The resilience and performance of the critical assets.

(ii) The evolution of the natural hazard threats.

(iii) Documenting extreme events (intense precipitations and floods, earthquakes, extreme wind speeds, etc.) and their impact on the critical assets.

(iv) Documenting the implementation of contingency plans (before, during and after the occurrence of extreme events) including the compilation of Lessons Learned.

Selection of key performance indicators (KPI)

4.24 To streamline the M&E system, the Consultant shall select a series of well-defined, measurable, and easy to interpret indicators. The analysis of the selected indicators should provide information on the evolution of the resilience of the assets as well as of the progression of the natural hazards threatening the infrastructure and the communities around the critical sites. The Consultant shall prepare, for each threat, a series of practical measures and indicators to assess the evolution of the hazards.

Adaptive management/planning

4.25 It is understood that the generation, transmission and distribution systems in Dominica will continue to expand and change in the future and the natural hazards will evolve with time and with climate change. Therefore, adaptive management and planning strategy are required. The Consultant shall propose the basis of such adaptive process, based on the M&E system and the perceived needs of the communities around the critical sites. Surveys and contingency plans updates shall be scheduled to provide DOMLEC with clear guides and methodologies to update them. The consultant shall provide the training (see section 3 below) needed to build the necessary in-house capacity.

Determination of key design parameters

4.26 Complementing the CVA, the consultant is expected to define the design parameters sensitive to climate change such as: (a) Estimates of extreme precipitation events for the design

of flood protection, intake structures, and drainage system; (b) maximum design wind speeds for the design of poles, roofs, infrastructure exposed to wind loads, the illumination system, signaling, and; (c) maximum range of extreme temperatures for mechanical and electric design considerations as well as for the road infrastructure. More precisely the consultants are expected to:

- Produce appropriate precipitation assessments for extreme events with return periods of 10 years, 20 years, 50 years and 100 years for climate conditions by mid-century. The precipitation's duration should cover the range of concentration times characterising all the drainage sites of interest.
- Define the range of maximum temperatures the system is likely to encounter in the future climate and recommend the temperature indicators for the engineering designs (this estimate have relevance in the design of reinforced concrete structures, metallic elements, joints , in the selection of mechanical and electrical equipment, ventilation systems and service road structure design, etc.)
- Define the maximum wind speed for the design of towers, crossings, bridges, signals, illumination works and for operational and management manuals and guidelines, as necessary.

Training program

4.27 The consultant shall provide training to DOMLEC staff aiming at building in-house capacity for monitoring, preparedness, and response to natural hazards risks. Furthermore, the consultant shall conduct workshops and presentations as well as conduct site visits seeking to gain buy-in from the personnel in charge of assets. Training should include:

- Risk analysis and prioritisation methodology;
- Development of monitoring programs;
- How to upgrade and update contingency plans, proposed required training and recommend guidelines for the implementation of contingency plans.

4.28 The consultant should conduct gender-sensitive interviews and surveys to identify the training and capacity building activities required by DOMLEC to integrate climate change considerations into its plans, investments, and operations. The consultant will make recommendations regarding gender-responsive training needs, data acquisition and alliances required to assess climate change impacts on DOMLEC infrastructure and mainstream climate considerations into its management and operations.

5. DELIVERABLES

5.01 The consultant will prepare:

(a) A nationwide Climate Risk Vulnerability Assessment for the electricity system in Dominica, based on the best available information. The document shall include the corresponding plan of actions to enhance resilience in the system. To disseminate the results, the consultant will also deliver PowerPoint presentations for selected audiences;

(b) At least six (6) site-specific vulnerability assessments, incorporating climate change and other natural hazards (namely earthquakes, landslides and volcanos) and including the corresponding plan of actions to enhance resilience. The reports should include pre-designs, cost estimates and preliminary benefit-cost analysis. To disseminate the results, the consultant will also deliver PowerPoint presentations for selected audiences.

(c) Technical Memorandum with the consultant's recommendation for the selection of design parameters sensitive to climate change (as per numeral 2).

(d) Training. The consultant will deliver at least 30 hr. of training and the didactic material used, including documents and PowerPoint presentations.

6. PERSONNEL QUALIFICATIONS AND EXPERIENCE

6.01 The success of the consultancy rests on the proper selection of the professional team to undertake the scope of work previously indicated. The suggested composition of the team is as indicated below, but the consultants are free to suggest different configurations with the knowledge and experience required to provide high-quality deliverables, on time as needed. The entire team should be available for mobilising to the sites two weeks after signing the corresponding task order.

(a) Project Team Leader: One of the Specialists on the team with no less than 15 years of experience as project manager or team leader in complex assignments will perform the functions of the team leader. The team leader must have the ability to guide his/her team, interact with DOMLEC and the CDB project manager, conduct gender-sensitive stakeholder consultations and prepare clear and succinct documents and presentations.

(b) Climate Change Specialist: - with a minimum of 10 years of professional experience and a graduate degree of MSc. or equivalent in a relevant subject. Experience should include working with data provided by Global Circulation Models and Regional Circulation Models, undertaking vulnerability assessments and familiarity with the Fifth Assessment Report of the IPCC. Professional experience should include working on engineering teams integrating climate change considerations into their design activities.

(c) Geotechnical Engineer of Geological Engineer: Professional with a minimum of 15 years of professional experience and a graduate degree of MSC or equivalent. Experience should

include slope stability analyses in mountainous regions, preferable of volcanic origin. Familiarity with Dominica landscape will be a plus.

(d) Three Civil Engineers; with technical competence and experience in river hydraulics, structural engineering, and hydrologic analyses. - Each professional should demonstrate the corresponding engineering qualification, a graduate degree of MSc or equivalent and 10 years' experience of carrying out the design and feasibility analyses covering all the key elements of the assets under consideration. Previous participation in disaster risk management activities is favored. Experience working as a team is preferred.

7. DURATION:

7.01 The studies should be completed over a period of 6 months with the following delivery schedule:

(a) Deliverable (a): Nationwide Climate Risk Vulnerability Assessment 3.5 months after the initiation of the task order;

(b) Deliverable (b): Six (6) site-specific vulnerability assessments; Two sites at the end of month 4, two sites at the end of month 5, and the remaining site-specific vulnerability assessments by the end of month 6.

(c) Deliverable (c): Technical Memorandum with the consultant's recommendation for the selection of design parameters sensitive to climate change no later than the end of month 3 of activities.

BUDGET (USD)

ITEM: Consultant Services	CDB	DOMLEC	TOTAL
1. Professional Fees	135,000		135,000
2. Air Travel	9,000		9,000
3. Per Diem	20,250		20,250
4. Local Transportation	2,250		2,250
5. Hotel	22,500		22,500
6. Report Preparation and Reproduction	3,000		3,000
SUB TOTAL	**192,000.00**		**192,000.00**