

**REQUEST FOR EXPRESSIONS OF INTEREST  
(CONSULTING SERVICES)**

**COUNTRY: RWANDA**

**NAME OF PROJECT: VOLCANOES COMMUNITY RESILIENCE PROJECT (VCRP)**

**Loan No./Credit No./Grant No.:7419-RW**

**Assignment Title: Design and Supervision of the Smart Green Village for Communities to be relocated under VNP Park Expansion.**

The Government of Rwanda (GoR), represented by the Ministry of Environment, has secured financing from the World Bank towards the implementation of the Volcanoes Community Resilience Project (VCRP). The project aims to strengthen climate resilience, reduce flooding risks, and improve natural resource and tourism asset management in Rwanda's Volcanoes region. The client intends to apply a part of the portion for this consultancy services for which this request for expression of interest is issued.

The consulting services (“the Services”) include the design and supervision of the construction works of the smart green village to host around 510 households that will be relocated from land areas currently occupied within the Volcanoes National Park. The green village will be constructed on over 50 hectares in Kaguhu cell, Kinigi sector, spanning residential zones, social infrastructure, economic facilities related to agriculture, livestock, and tourism as well as associated site development works. The proposed village is envisaged as a self-sustaining, climate-resilient rural community that balances high living standards and quality of life for its residents along with innovation in ecological design, green infrastructure, renewable energy, sustainable farming and community-based conservation tourism.

The Terms of Reference (TOR) for the primary procurement stage for the assignment can be found on the following website <https://rdb.rw/media/#tenders>.

The Rwanda Development Board now invites eligible consulting firms (“Consultants”) to indicate their interest in providing the above services. Interested Consulting firms should provide information demonstrating that they have the required qualifications and relevant experience to perform the services. The shortlisting criteria are:

- The consulting firm must be registered as an engineering firm in the country of origin and recognized by a relevant professional body with a valid certificate.
- Notarized proof of collaboration with Green Building Rating System such as LEED or EDGE during the post-construction stage.
- The Firm should have minimum of ten (10) years of experience in architectural planning, designing and supervision of social houses construction project development, preferably, both the international and national (Rwanda);
- At least two (2) successfully completed development assignments of similar size, scale, scope and complexity to support program objectives related to social/ community

development, conservation, tourism, education, climate smart agriculture and others, supported with two (2) certificates of good completion accompanied by copies of the contracts with value not less than 20 Million USD each;

- The firm should demonstrate relevant experience and abilities in the following areas:
  - Project planning, design (architectural, engineering, etc.), Environmental and Social impact assessment and implementation to support successful land and infrastructure-based development projects.
  - One health concept and principles as they are applied to building and landscape planning and development projects (conservation and environmental sustainability, human health, social impacts and benefits, etc.);
  - The applications of green building design, innovations, principles and practices, including: clean water, wastewater and sanitation, power, sourcing local building materials, landscape, and conservation (water, sanitation and energy);
  - Projects that support rural settlement, eco-tourism, smart agriculture infrastructure, education and information such as, schools, use of smart and green technologies;
  - Proven abilities and experiences in incorporating Rwandan cultural/context/Made in Rwanda principles and practices into planning and design.

The shortlist will contain of a minimum number of four (04) firms to be shortlisted to a maximum number of eight (08) firms.

The attention of interested Consultants is drawn to Section III, paragraphs, 3.14, 3.16, and 3.17 of the World Bank's "Procurement Regulations for IPF Borrowers" September 2023 ("Procurement Regulations"), setting forth the World Bank's policy on conflict of interest specifically *paragraph 3.17 of the Procurement Regulations*.

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.

Further information can be obtained from **09:00 to 17:00 hours local time** by sending an email to [spiu.procurement@rdb.rw](mailto:spiu.procurement@rdb.rw) with a copy to [noella.nyishimete@rdb.rw](mailto:noella.nyishimete@rdb.rw) and [procurement@rdb.rw](mailto:procurement@rdb.rw) within two thirds (2/3) of the deadline period for the submission of the expression of interests.

Expressions of interest must be submitted to the email address: [spiu.procurement@rdb.rw](mailto:spiu.procurement@rdb.rw), copy [noella.nyishimete@rdb.rw](mailto:noella.nyishimete@rdb.rw) and [procurement@rdb.rw](mailto:procurement@rdb.rw) not later than **28<sup>th</sup> October, 2024 at 16:00 (local time)**. Your documents shall be valid for a period of 120 days from the date of submission.

Late applications shall not be considered.

**Rwanda Development Board (RDB)**

**Phone: +250788296976 Email: [spiu.procurement@rdb.rw](mailto:spiu.procurement@rdb.rw);**

**P.O Box: 6239 Kigali-Rwanda RDB Building, 1 KG 9 Ave**

**Joseph Cedrick Nsengiyumva**

**Chief Financial Officer**

## **TERMS OF REFERENCE**

### **Design and Supervision of the Smart Green Village for communities to be relocated under VNP Park expansion.**

#### **I. Background**

The Government of Rwanda (GoR) represented by the Ministry of Environment (MoE) has received financing from the World Bank towards the cost of the implementation of the Volcanoes Community Resilience Project (VCRP). The project development objective (PDO) is to strengthen climate resilience, reduce the risks of flooding, and improve the management of natural resources and tourism assets in the Volcanoes Region of Rwanda.

To address the challenges related to human-wildlife conflict and flooding challenges, the project will target 733.5 ha of park expansion in the first phase of implementation. The Park expansion will involve the resettlement of around 510 households which will be settled in model smart green villages.

It is within this context that the Government of Rwanda through this project, is developing Volcanoes National Park smart green village to host community around the park within the District of Musanze as one of the priority conservation and tourism diversification projects that will help achieve tourism, conservation, and sustainable community development goals.

The key objectives for the model village are: (1) Construct climate resilient houses integrated with shared infrastructure for 510 families. (2) Design public amenities like schools, health centers, community halls for use by village residents, (3) Establish agriculture, livestock zones on 30 hectares earmarked; design capacities to meet self-sufficiency and commercial goals. (4) Create 5 hectares exclusive eco-tourism zone with recreational spaces, hospitality infrastructure to promote conservation and benefit from tourism. (6) Apply principles of green infrastructure, energy efficiency and environmental standards across the built environment, (7) Provide skills development, training and operational employment for residents displaced from traditional means of subsistence. (8) Develop a replicable model for future green village settlement projects across Rwanda and other similar landscape in Africa.

The village aims to balance equitable living standards for relocated people while innovating climate friendly design practices in line with national policies - vision 2050, green growth

commitments. It intends to improve community participation in advancing conservation and tourism expansion plans. The project has secured World Bank funding and is aligned to community resilience and social safeguard agendas.

The village is designed to accommodate 510 households and the average family size is 4-5 members. With a buffer estimate, the village aims to provide housing and livelihood support for approximately 3000 residents. The proposed site is in Kinigi sector, Musanze district within the Northern Province of Rwanda. Specifically, approximately 50 hectares of land has been earmarked by the Government of Rwanda in Kaguhu cell, Kinigi sector. This lies near the existing town center and allows future expansion needs.

## **Green Village Key Components**

### **Housing Zone**

The housing zone encompasses the complete residential district spread over 8 hectares land planned to accommodate 510 family units. Using sustainable architectural design principles, houses will be constructed from locally sourced renewable materials like compressed stabilized earth blocks, volcanic stones, bamboo and timber promoting energy efficiency.

The single-family homes will each have an average size of 150 square meters, providing comfortable living space for families. The homes will include 3 bedrooms, a front garden, front porch, living room, storage, backyard, kitchen, kitchen garden and toilet and are constructed using locally sourced and renewable materials including compressed earth blocks, stone, timber, and bamboo. Orientation and placement of the homes maximize natural lighting and ventilation. Passive climate control design allows homes to stay cool in summer and warm in winter without extensive use of energy.

Water conservation features include rainwater harvesting, greywater reuse systems, and water-efficient plumbing fixtures. Composting toilets allow waste to be revalorized into fertilizer outputs. Solar panels provide renewable electricity.

Integrated stormwater management uses bioswales, raingardens, sustainable drainage systems and retention ponds to capture rainfall, filter water naturally, prevent erosion, and recharge

groundwater. Edible landscaping and community gardens between the homes and along pedestrian paths provide food production.

The housing block is designed to sustainable building standards to provide seismically safe, resilient, comfortable homes for the village families while restoring the local landscape. The integrated green infrastructure ensures affordable access to water, energy, and productive outdoor spaces to support self-sufficient and environmentally friendly living.

The layout plan should allow agglomeration of housing for more efficient land use, access to community facilities, development of physical structures, social and economic infrastructure and community integration. It should follow Zoning regulations including building plot development parameters including setbacks if applicable, Floor Area Ratio, Plot Coverage, and densities. Should create a Circulation plan including Walkways and roads at the same time providing strong connection with the community.

Housing design in volcanic community resilient village should be planned and designed in a way to integrates and respects zoning regulations for rural settlement sites and the rural context by following the densification of 40-70 DU/Ha, higher density would be recommended.

The unit form should be culturally responsive, arranging the spaces from the walkway to private space (internal rooms of the main house), towards the backyard (kitchen (igikoni), storage, bathroom, shelter for domestic animals), and connecting to the outdoor kitchen garden.

### **Social Infrastructure Zone**

This 5-hectare zone houses public amenities to serve village administrative needs and offer essential services for education, healthcare, governance requirements and socio-cultural purposes. Key facilities include a primary healthcare center, pre-primary and primary school complex, administrative office spaces, playgrounds and a large multipurpose public hall for community gatherings. The positioning allows easy access from village homes.

The infrastructure zone aims to provide dedicated spaces to deliver vital services, anchor community development initiatives, integrate utilities like water, power, roads and also parking

areas. It utilizes green construction materials and renewable energy in line with the village ecological vision.

### **Agriculture Zone**

The agriculture zone will support food production and agriculture-based livelihoods for the village residents with a focus on horticulture and seed production. Spanning 20 ha, it will contain facilities from production, storage, sorting, packaging and distribution s - enabling year-round cultivation, higher yields, reduced waste, and value-addition of produce. The integrated infrastructure aims to improve village nutrition and incomes through sustainable agriculture practices. By adopting a circular economy approach, the zone also reutilizes solid and liquid waste for energy biogas and organic fertilizers. The agriculture zone intends to build village self-sufficiency, nutrition levels along with exploring commercialization opportunities.

### **Livestock Zone**

The livestock zone will enable small-scale, sustainable livestock production to provide dietary protein and additional income for the village residents. The focus will be on small livestock production including poultry, sheep and swine. spanning on 5 ha, it will contain facilities from production to distribution including fodder production, on-site processing room allows for slaughtering, dressing, and packing, shelters, manure production and collection, veterinary pharmacy and a clinic.

### **Tourism Zone**

The green village eco-tourism and recreational zone will promote sustainable tourism practices, supporting local economic development, preserving, and showcasing local culture. The smart green village eco-tourism and recreational zone will equally encompass a diversity of eco-tourism and recreational experience in consideration of the targeted market. The consultant will Assess and propose eco-tourism and recreational activities to be considered under the smart green village eco-tourism and recreational zone such as community-based tourism activities, cultural and historical experience, eco-lodge, playground, adventure and sports activities, agro-tourism experience and hospitality and eco-tourism skills development. The proposed activities should be

in line with the national conservation and tourism vision, ensuring business viability and benefits local communities.

## **II. SCOPE OF WORK**

The scope of works entails delivering a complete smart green village including Design and supervision phases.

### **2.1 Design Phase**

The design phase includes preliminary works, planning, architectural and engineering designs.

Key elements covered under the design phase are:

#### **2.1.1 Preliminary Works**

##### **A) Topographical Survey**

The consultant shall carry out a detailed topographical survey of the entire site to enable proper planning and design of construction works.

Key activities include:

- (1) Setting out surveyed control points and temporary site benchmarks
- (2) Carrying out plane table surveys using approved instruments to determine coordinates, features and ground levels.
- (3) Preparing a topographical map showing contours at interval of 1m or less as required
- (4) Mapping key site information - access roads, existing structures/foundations, vegetation, water bodies etc.
- (5) Identifying underground utilities if present
- (6) Demarcating setback limits, buffer zones for conservation etc.
- (7) Establishing permanent site datum and reference points
- (8) Submitting a soft copy of the survey drawings/data to the Engineer for review

##### **B) Soil Investigation**

The consultant shall carry out detailed soil testing to determine the subsurface conditions, ground bearing capacity and foundation design requirements. Testing shall comprise of:

- Field identification of soil

- Shear Strength
- Soil Particle Distribution
- Soil Permeability
- Soil Bearing Capacity
- SP & Bore Hall (In-Situ tests as required - SPT, plate load test)
- Excavating multiple trial pits test up to depths of around 3 metres
- Logging soil samples from each layer and classifying soil types
- Carrying out tests to determine - Atterberg limits, grain size analysis, density etc.
- Preparing test reports for Engineer's review
- Shear Strength Test of the soil test is recommended

### 2.1.2 PLANNING

#### A) Housing Zone

Community Consultations	(1) Conduct focused group discussions with relocated families to understand household demographics, size, vulnerability aspects.
	(2) Gather inputs on specific housing needs - room types, storage, facilities for elderly, differently abled.
	(3) Take feedback on cultural practices, social dynamics to integrate within housing zone layout plans.
Spatial Analysis	(1) Develop area statements outlining land use budgets, density patterns and allocation ratios for facilities.
	(2) Map terrain contours, slopes, water bodies to earmark buildable zones following buffer allowances.
	(3) Overlay geospatial data, imagery to assess sun paths, wind flows and other climatic factors.
Layout Plans	(1) Sketch alternative site layouts indicating positioning of housing clusters, pathways, public squares, play areas based on standards.
	(2) Estimate carrying capacity of earmarked zone for population, road lengths, community assets.



Architectural Plans	<ul style="list-style-type: none"> <li>(3) Select optimal site layout balancing land use efficiency, infrastructure costs, convenience and safety.</li> </ul>
	<ul style="list-style-type: none"> <li>(1) Design context-specific conceptual building forms responding to site settings, user lifestyle choices.</li> <li>(2) Develop housing unit plans showing room articulations, functional spatial flow, incremental expansion flexibility.</li> <li>(3) Incorporate traditional motifs and localized materials giving cultural identity.</li> </ul>
Infrastructure Interlinkages	<ul style="list-style-type: none"> <li>(1) Draw up integration points with central utilities like grid, pipe networks keeping affordability, climate responsiveness in mind.</li> <li>(2) Identify renewable energy adoption opportunities - household biogas plants, community solar panels.</li> </ul>

## B. Social Infrastructure Zone

Needs Assessment	<ul style="list-style-type: none"> <li>(1) Estimate population size and demographics requiring social infrastructure provisions.</li> <li>(2) Conduct community consultations to understand village expectations regarding public services.</li> <li>(3) Map existing amenities in vicinity to determine gaps in education, healthcare, governance areas.</li> <li>(4) Engage key stakeholder including Ministry of Education, Ministry of health, Ministry of infrastructure, Rwanda Housing Authority, MINICOM, Ministry of Agriculture and Ministry of local government on approved standards and regulations.</li> </ul>
Infrastructure Planning	<ul style="list-style-type: none"> <li>(5) Size essential facilities based on population metrics - schools to match student strength; health center as per village scale.</li> <li>(6) Allocate land parcels for identified structures - school zones segregated by age; administrative office blocks; public gathering halls.</li> <li>(7) Develop area statements defining land use budget ratios for public amenities, utilities, landscaping.</li> </ul>

Facility Concept Plans	(8) Create design briefs for each facility outlining dimensions, spatial flows, localization aesthetics balancing form and function.
	(9) Conceptualize different zone plans showing positioning of structures, linkages and circulation allowing incremental expansion.
	(10) Sketch 3D wireframes and massing diagrams to visualize spatial arrangements of varying altitudes responding to needs.
Infrastructure Interlinkages	(11) Draw up integration points for centralized utilities like renewable energy micro grid, water supply networks.
	(12) Identify rainwater harvesting structures, underground water reservoirs aligned to landscaping areas.
	(13) Include organic waste converters, recycling provisions assessing degradable volumes from facilities.

### C)Agriculture, Livestock and Tourism Zones

<b>Technical specifications (for each zone)</b>	Refer to the livelihood restoration Plan ( to be shared by the client )
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#### 2.1.3 Architectural and engineering designs.

##### Design principles

Following and improving on the Integrated Development Programme Model Villages’ 11 pillars outlined by the Rwandan Government, the spatial guidance provided by the National Land Use and Development Master Plan, the Green Villages would also incorporate the One Health National Strategic Plan in reinforcing the interconnectedness of human, animal, and plant health through the design to be a model of regenerative rural development, going beyond the standard of net zero carbon in use, but also looking at the regeneration of natural ecosystems and having human and natural systems actively co-evolving..

## **A) Master Site Layout Plan**

The consultant shall prepare an integrated site plan showing the overall layout and allocation of spaces considering site topology, planning guidelines, infrastructure networks, environmental factors and community requirements.

Activities include:

- Using topographical surveys and soil investigation inputs to assess feasibility.
- Working closely with RDB and community stakeholders to understand space needs and priorities.
- Designing the site layout keeping sustainable planning principles in mind
- Allowing adequate spaces for positioning housing clusters, public buildings, access roads etc.
- Earmarking public community spaces, agricultural, livestock and tourism areas
- Accommodating environmental conservation zones and setbacks
- Designing suitable landscaping elements and schemes
- Planning appropriate zones as per uses - residential, mixed-use, forests etc.
- Providing diagrams clearly demarcating site sections, infrastructure routes and layout markers
- Incorporating universal accessibility within the site layout
- Identifying suitable locations for water storage tanks, power houses, waste management zones
- Consulting RDB/local authorities and incorporating any code compliance needs.
- Submitting draft master layout plan drawings for Engineer's review along with explanations where needed.

## **B) Architectural Design**

The consultant shall provide complete detailed architectural designs for various buildings and infrastructure covered under the project. This includes:

### **Housing Units**

- Preparing designs for houses based on sustainable and green building principles.
- Incorporating climate responsive architectural elements into housing units

- Designing appropriate layouts for rooms, kitchens, toilets etc. catering to family sizes with flexibility provided
- Identifying durable, eco-friendly construction materials for external/internal wall finishes, roofing etc.
- Positioning doors, windows for optimal natural ventilation and lighting
- Furnishing built-in storage spaces and provisions for water, power and data connectivity
- Considering incremental expansion possibilities in the housing unit designs
- Providing universal accessibility features as needed.
- Optimizing passive temperature regulation, thermal comfort in housing units through appropriate architectural elements

### **Social infrastructure**

- Designing the form, layouts and architecture of identified public buildings as per their usage - schools, health centres, community halls etc.
- Adapting the positioning, envelopes and materials to local climatic conditions and green building best practices
- Consulting respective authorities on specific dimensional and layout needs
- Incorporating spaces for differently abled access as per universal design principles
- Allowing flexibility and provisions for fitting electrical, plumbing, acoustics, fire safety, ventilation needs.

### **Economic zone (agriculture, livestock, and Tourism)**

- Develop site schemas with block plans for buildings, utilities, and landscaping.
- Prepare dimensioned drawings - floor plans, sections, elevations, and site plan for facilities including greenhouses, livestock shelters, processing units, compost pits, water reservoirs, gatehouses, ecolodge, CBT center, etc .....
- Design access roads, pedestrian walkways, drainage, and sustainable landscaping.
- Work out structural engineering design with analysis for foundations, columns, beams, floor slabs and roof elements using optimal construction materials while integrating preservation and efficiency principles.

- Generate detailed working drawings ready for contractor bidding showing layouts, structural details, and technical specifications.
- Design building services - electricity distribution with solar power backup, lighting design, plumbing schematics, ventilation, firefighting systems.
- Plan layout with required finishing schedules - flooring, plastering, painting and façade design.
- Allow provisions for signage and way of finding across the agriculture and livestock zones.
- Prepare bill of quantities, cost estimates, tender documents with technical specifications required for bidding process.

### **C) Site Development Works**

- Designing suitable hard and soft landscaping elements across the site - parks, garden spaces, tree belts etc.
- Providing playable spaces, trail markers, outdoor fitness provisions as identified through community engagements.
- Designing recreational spaces for people of various age groups and abilities
- Considering needs for signage boards/totems outlining heritage elements, flora/fauna descriptions etc.
- Designing suitable street furniture and accessories providing an inviting, lively public environment

### **D) Sustainable Green Building Design**

The Contractor shall adopt principles of green/sustainable building design optimizing energy efficiency, water conservation and waste reduction while creating a healthy built environment.

Key activities include:

- Setting clear sustainability goals and targets to achieve through the building design
- Leveraging climate responsive architectural design strategies for thermal comfort, ventilation, day lighting etc.
- Analysis of site climate, rainfall patterns, vegetation, topology for climate-sensitive building design
- Modeling energy loads and usage intensity for residential and community buildings

- Identification and design of renewable energy systems to support projected loads
- Design of grey water recycling systems, rainwater harvesting provisions
- Specification of sustainable, eco-friendly, locally sourced construction materials with low embodied energy
- Designing suitable operational waste management provisions focusing on sorting, processing and recycling
- Proposing construction techniques minimizing waste; Usage of prefabricated components, modular design
- Leveraging automation and smart technologies for monitoring and optimization of resource usage
- Considering sustainability rating systems like LEED and aligning design to target minimum certification levels.
- Preparing a Sustainability Report indicating site ecology preservation, carbon reduction, water conservation, materials utilization and other metrics comparing design alternatives.

## **E) Infrastructure Designs**

The Contractor shall provide engineering designs, specifications and implementation plans for essential infrastructure systems:

### **Power Infrastructure**

- Designing an independent mini solar grid system with PV panels, battery storage to meet projected residential and public area loads.
- Sizing of grid components – inverters, charge controllers, transformers
- Designing MV/LV distribution network connecting houses, public buildings & utilities
- Planning grid efficiency enhancements leveraging smart monitoring and control technologies.
- Lighting system design – street lighting, solar studs leveraging efficient fixtures.
- Connection to National grid as back up

### **Water Supply Infrastructure**

- Design of water supply network connecting to identified sustainable sources.

- Design of water treatment system and pumping requirements
- Sizing of overhead and ground level storage reservoirs
- Design of water distribution and reticulation system based on usage segments.
- Positioning of water collection points, community stand posts, plumbing connections.
- Storm water and grey water recycling systems design
- Specification of piping, appurtenances - sustainable materials promoting longevity
- Design wastewater and solid waste management.

## **F) Landscaping Design**

The Contractor shall provide landscaping plans improving site aesthetics while integrating sustainability principles in the softscape design.

This involves:

- Identification of suitable indigenous shrubs, bushes, plants & grasses based on site ecology, soils and climate conditions.
- Design of thematic gardens, tree belts and plantation zones across residential and public areas
- Positioning of permeable landscape materials for surface runoff management
- Design of trails, stone clad rest areas, parks/play spaces for creating inviting public environments
- Identification of flora suiting pollinator insect habitats and local bird species conservation objectives
- Drawing outlines for implementing land formations, terrain modeling to blend infrastructure.
- Sourcing sustainable reforestation systems, vertical green wall panels/trellises as needed.
- Providing suggestions on operations - composting, mulching, watering cycles, biological control methods
- Considering tourism, promotion needs - labelling of flora identities across walking paths.

**Deliverables**

As per the descriptions and scopes, stated above, the consultant is expected to submit deliverables as tabulated below:

Proposed Project Phasing, Elements and Description of Work	Outputs / Deliverables
<b>Phase I – Pre-design Assessment, Immersion/Visioning and Other Preliminary Activities</b>	
<p><b>1-1. Predesign Assessment &amp; Immersion</b>                      The development of a pre-design for GSV will focus on below elements:</p> <ul style="list-style-type: none"> <li>• Site / familiarization visit.</li> <li>• Pre-design assessment; and</li> <li>• Immersion / vision exercise in consultation with MoE and key stakeholders / partners – as identified by the MoE, a special attention need to be given to affected communities during those consultations</li> </ul> <hr/> <p><b>1-2. Other Preliminary Activities:</b></p> <ul style="list-style-type: none"> <li>• Topographic and cadastral survey of site;</li> <li>• Geotechnical and geological investigations; and</li> <li>• Results of hydrologic, hydraulic, seismic, and environmental conditions</li> <li>• Others as determined by the consultant.</li> </ul>	<p><b>1.</b> Pre-design assessment report that includes:</p> <ul style="list-style-type: none"> <li>• project’s core vision, mission, goals and objectives.</li> <li>• results of topographical and cadastral surveys; and</li> <li>• results of geotechnical and geological investigations.</li> <li>• Results of hydrological, waste management, seismic, and environmental conditions investigation</li> </ul>
<b>Phase II: Project Design and Master Plan</b>	



<p><b>2-1. Preliminary / Schematic Design</b></p> <ul style="list-style-type: none"> <li>• Create entire SGV preliminary/schematic design for all components through iterative consultation process with key MoE, RDB team members.</li> <li>• Determine project zoning and jurisdictional requirements (e.g., planning, permitting, building code, etc.);</li> <li>• Final preliminary design(s) selected by the Client.</li> <li>• Master Plan for project and any additional design options required to support preliminary design and master plan;</li> <li>• Development of preliminary cost estimates based on selected design; and</li> <li>• Complete preliminary structural studies for architectural design, on basis of selected preliminary design.</li> </ul>	<p>2-1. Preliminary concept design report / booklet that incorporates:</p> <ul style="list-style-type: none"> <li>• Preliminary/ concept designs model (1:5,000 scale);</li> <li>• preliminary design sample boards.</li> <li>• Project zoning and jurisdictional requirements brief note</li> <li>• A power point presentation, or other suitable presentation format.</li> <li>• 3D Rendering</li> <li>• Preliminary cost estimates; and</li> <li>• Master plan for the project including zoning, landscaping, layout plan, etc.</li> <li>• Complete preliminary structural study reports</li> </ul>
<p><b>2-2. Environmental and Social Impact Assessment (ESIA)</b></p> <ul style="list-style-type: none"> <li>• Environmental/Social, health and safety strategic plan in accordance with national guidelines and world bank requirements.</li> </ul>	<p><b>2-2. Environmental and Social Impact Assessment (ESIA)</b></p> <p><b>deliverables are:</b></p> <ol style="list-style-type: none"> <li>1. EIA Certificate</li> <li>2. ESIA Report</li> <li>3. ESHS Reports</li> </ol>

<p><b>2-3. Detailed Design</b></p> <p><b>a.</b> Detailed architectural and structural, electrical, mechanical, Water Supply and plumbing, Waste treatment and disposal, Fire fighting plan, landscape designs for <b>Housing</b>(3 bedrooms and annex with store, kitchen,Washroom);</p> <p><b>b. Social Infrastructure</b>(10-bed primary care Type B2 health center, Nursery, and primary school to cater for students from 510 households as per school construction standards; Administrative block; Multipurpose Hall to accommodate 200 peoples); Agriculture facilities(5Fully automated greenhouses with (1000sqm each), Hydroponic potato seed production unit (500 sqm), Drip irrigated Organic farming plots (5 Ha), Cold storage facility (750 sqm) with capacity for 150 tons of fresh produce, Vegetable processing unit (500 sqm); <b>Livestock facilities</b>(Poultry Farm for 5,000 broiler chickens on (1,000 sqm) incubation room;_Sheep Unit with a holding capacity of 200 sheep,_Swine Unit for 100 pigs,_Ancillary Facilities (A veterinary pharmacy stores basic medicines and vaccines); <b>Tourism</b> (Ecolodge for no more than 20 rooms on 2,500 square meters, Community-Based Tourism Center); <b>Smart Sport facilities</b></p>	<p><b>2-3. Detailed Design deliverables are:</b></p> <ol style="list-style-type: none"> <li>1. Detailed Designs Drawings, plans, elevations, sections and other key detailed design products at appropriate detail &amp; scale;</li> <li>2. Detailed project cost estimates;</li> </ol>
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<p><b>. Construction Design</b></p> <p>Detailed construction plans, drawings, elevations, sections, etc. of the following smart green village components:</p> <ul style="list-style-type: none"> <li>• <b>Housing</b> (3 bedrooms and annex made of kitchen, toilet and bathroom);</li> <li>• <b>Social Infrastructure</b>(10-bed primary care Type B2 health center, Nursery, and primary school to cater for students from 510 households as per school construction standards; Administrative block; Multipurpose hall to accommodate 200 peoples);Agriculture facilities(5Fully automated greenhouses with (1000sqmeach), Hydroponic potato seed production unit (500 sqm), Drip irrigated Organic farming plots (5 Ha), Cold storage facility (750 sqm) with capacity for 150 tons of fresh produce, Vegetable processing unit (500 sqm);</li> <li>• <b>Livestock facilities</b>(Poultry Farm for 5,000 broiler chickens on (1,000 sqm) incubation room;_Sheep Unit with a holding capacity of 200 sheep,_Swine Unit for 100 pigs,_Ancillary Facilities (A veterinary pharmacy stores basic medicines and vaccines);</li> <li>• <b>Tourism</b> (Ecolodge for no more than 20 rooms on 2,500 square meters, Community-Based Tourism Center);</li> <li>• <b>Smart Sport facilities</b></li> <li>• Cost estimates/bill of quantities (BoQs)</li> </ul>	<p><b>2-3. Construction Design deliverables are:</b></p> <ol style="list-style-type: none"> <li>1. Final construction plans and drawings (at appropriate scale);</li> <li>2. BOQs and costing info;</li> <li>3. Technical specifications;</li> <li>4. Tender document</li> </ol>
<p><b>2-4. Applying for a construction permit</b></p>	<p>1. Construction permit acquisition</p>

## **Deliverables and Payment Modalities:**

<b>Deliverable</b>	<b>Period</b>	<b>Payment</b>
Inception	2 Weeks	-
Pre-design assessment report	2 Weeks	20%
Preliminary concept design report	1.5 Months	20%
Detailed Design	2.5 Months	30%
Construction Drawings	1 Months	30%

## **2.2 Supervision Phase**

### **2.2.1 Pre-construction phase**

The role of the supervising consultant is to:

- Approve proposed reviews submitted by the contractor
- Ensure compliance with specifications, drawings, safety procedures, ESHS requirements etc.

### **2.2.2 Construction Phase**

The following are the key activities to be performed by the supervising firm during the execution phase:

- Ensure a day to day close follow up of the project implementation activities,
- Supervise key construction activities onsite – foundation works, masonry works, concrete works, water proofing, steel works, woodworks, etc. to validate alignment with approved drawings and method statements,
- Supervise the construction activities to ensure alignment with the Environmental, Social, Health and Safety specifications for the works,
- Provide work progress monthly report, quarterly and other deemed reports by the client to ensure compliance with documents and to maintain government standards;
- Attend weekly contractor meetings/inspections and be responsible to minute the meetings and liaise with RDB & RHA , Project Manager and others as may be required on all relevant matters. Be prepared to issue any additional field notifications, site instructions,

change notices etc. as may be required on a timely basis so as not to impact the construction schedule;

- Be responsible declare Project as Substantially Complete and prepare and manage any Deficiency List ensuring 100% Completion within the Project Timeline under direction of RHA and RDB's Project Manager;
- Ensure that all appropriate Schedules are signed and submitted at conclusion of the Work;
- Be responsible to document, in email format, all critical liaisons, meetings, decisions made and agreed to and/or accepted by RDB & RHA , Project Manager and/or others on the Consulting Team throughout full term of work on the Project, so that a detailed record of the project is maintained;
- Carry out regular site inspections to monitor progress, workmanship, quality of construction materials and compliance with specifications;
- Witness pre-construction testing of building materials – bricks, tiles, glass panels etc. to review test certificates before contractor utilizes them for works;
- Supervise and certify testing activities at site for completed works – compaction tests, reinforcement detection, pipeline pressure testing etc. ensuring adherence to specifications.
- Review and approve sources of materials supply, manufacturers' literature before contractor places order.
- Based on the payment method agreed, verify volumes of work constructed and approve invoices.
- Supervise erection and pre-testing of major infrastructure equipment before commissioning – solar panels, pumps, transformer stations, DG sets etc.
- Supervise installation of building systems – wiring, plumbing, sewer lines, drainage, HVAC connections etc. and issue completion certificates.
- Review and issue contractor's progress valuation certificates within 7 days of quality and quantity verification for completed works.
- Inspect completed works, issue defect notices, ensure defect rectification within defect liability periods before issuing final completion certificate.
- Review as-built drawings, test records, maintenance registers, equipment data books updated by contractor prior to issue of final completion certificate and occupancy permit.

### **Defects Liability Period**

- Conduct joint inspection with the Contractor at the end of 18-month defects liability period (DLP) and recommend extension, if required.
- Review any defects, deteriorations, leakages, malfunctions, settlement signs etc. during the DLP and issue notices to contractor for rectification/repair works.
- Inspect fault rectification activities by contractor and issue clearance certificates. Follow up persistently until all identified defects are repaired to ensure completed works are durable as intended.
- Respond promptly to any emergency or breakdown situation for repaired/renewed facilities and infrastructure components assisted by contractor.
- Ensure all specialized sub-contractors are retained by Main Contractor during complete DLP for any performance related work or emergencies.
- Review replaced spare part codes, descriptions, specifications, warranty, shelf life, recommended maintenance checklist submitted by contractor upon defect rectification.
- Conduct 100% inspection jointly with RDB and Contractor at the end of DLP and certify final completion while closing outstanding defects notices.

### **2.2.3 Deliverables and Reporting Requirements**

The Supervision Consultant shall provide the following deliverables during the project duration:

#### **a) Inception Report**

1. Project execution plan with defined roles and responsibilities
2. Mobilization plan for expert personnel
3. Quality Assurance Plan for construction works.
4. Template for data capture, monitoring and reporting.

#### **b) Approval of reviewed Design**

Provide the approval of reviewed design by the contractor and updates as deemed necessary during the construction.

#### **c) Monthly and quarterly Progress Reports**

1. Physical progress status and conformance to timelines

2. Non-compliance and recommended corrective actions
3. Issues impacting project cost, quality, and delays.
4. Progress photographs including aerial photographs
5. Test results overview.
6. Environmental and Social compliance status
7. Project financial status.

**d) Commissioning and Handover Dossier**

1. Commissioning procedure review
2. Works completion certificates
3. As-built drawings
4. Equipment manuals, warranties and guarantees.

**e) Completion Report**

1. Summary of works executed.
2. Key milestones met.
3. Final observations and remarks

The table below summaries the deliverables and timeline for reporting:

<b>Deliverable</b>	<b>Period</b>
<b>Inception Report</b>	2 weeks After contract signature
<b>Monthly and quarterly Progress Reports</b>	Within 10 days of the next month
<b>Completion Report</b>	1 month after provisional acceptance
<b>Final Report</b>	3 weeks after the completion of the DLP

### **2.2. 5.Payment modality:**

Payment shall be upon presentation and approval of a quarterly invoice.

This has to be detailed in the RFP, which shall include details on the fixed and reimbursable payments and payment modalities.

### **2.2.6. Liaison with Stakeholders**

The appointed Supervision Consultant will be required to actively coordinate with various project stakeholders including Rwanda Development Board (RDB), Rwanda Housing Authority (RHA), MoE, MINEDUC, RBC, MININFRA, REMA, RWB, METEO RWANDA, RTDA, RISA, REG, WASAC GROUP, RAB, MINAGRI, Civil Societies and Local Authorities

- Coordinate periodically with them on progress, issues, quality aspects and certify contractor payments.
- Support RDB and MoE with technical advice during project interventions.



### **III. Qualification and Requirements of Consulting Firm/Company**

#### **3.1 Company Profile & Experience**

The company should demonstrate abilities and wide experience in development of the project management, architecture designs for land and infrastructure-base development projects for social houses; and the assessment of the environmental and social impacts of development projects.

##### *Be Interested and Experienced*

The firm must have a genuine interest in the development and advancement of Rwanda as a nation, for which the planning and design of the smart green village will contribute through support of community economic development for communities adjacent to Volcanoes National Park and conservation.

The Firm should have minimum of ten (10) years of experience in architectural planning, designing and supervision of social houses construction project development, preferably, both the international and national (Rwanda) with at least two (2) successfully completed development assignments of similar size, scale, scope and complexity to support program objectives related to social/ community development , conservation, tourism, education, climate smart agriculture and others, supported with two (2) certificate of good completion accompanied by copies of the contracts.

The firm should have relevant experience and abilities in project planning, design (architectural, engineering, etc.), Environmental and social impact assessment and implementation to support successful land and infrastructure-base development projects.

##### *Company Knowledge, experience and abilities – relevant to this project assignment:*

- Planning and architectural design principles, techniques and practices
- One health concept and principles as they are applied to building and landscape planning and development projects (conservation and environmental sustainability, human health, social impacts and benefits, etc.);

- In the applications of green building design, innovations, principles and practices, including: clean water, wastewater and sanitation, power, sourcing local building materials, landscape, and conservation (water, sanitation and energy);
- Projects that support rural settlement, eco-tourism, smart agriculture infrastructure, education and information such as, schools, use of smart and green technologies;
- Proven abilities and experiences in incorporating Rwandan cultural / context / Made in Rwanda principles and practices into planning and design.

### **3.2 Key Team Members and Experience**

The following outlines the suggested minimum team composition and experience for the project.

#### **Team Leader (1)**

- Must have a minimum of a bachelor degree in civil engineering, with Master degree in construction project management;
- Have extensive experience in the application of infrastructure projects planning and management, architectural design and engineering concepts, practices and techniques necessary to support infrastructure projects of similar type, scope and scale to this assignment.
- Experience directing, coordinating and working with skills in leading multi-disciplinary teams;
- Have at least **10** years of practical experience in planning, design and management of similar integrated planning, infrastructure and landscape design projects;
- Must have been involved in lead role in at least **3** successful similar projects of similar size, scale and scope (conservation, social/community development), of which **1** project must have been in Rwanda (proof must be presented);
- Knowledge of and experience in the application of sustainable architectural and landscape planning and design from a social, economic, conservation and eco-tourism experience (education) perspective;
- Knowledge and experience in the application of environmental and social impact assessment principals, practices and techniques related to infrastructure projects;
- Knowledge and experience in public and stakeholders engagement;
- Fluency in English and Kinyarwanda as an added value.

#### **Project Planning and Architectural Design experts/Architects (minimum of 2 staff)**

- Project planning and architectural design experts/ Architects in the field of smart green designs for social houses, smart agriculture infrastructures, integrated model villages and eco-tourism facilities;
- Experience with visioning, immersion, public consultation and engagement processes, principles and practices in the development of project vision, mission, goals and objectives;
- Knowledge of environmental and social issues and green building principles and practices;
- Senior planning and architectural design team member(s):
  - Have a minimum of a Bachelors degree holder in architecture, urban planning relevant to this assignment;
  - knowledge and experience in architectural design principles, practices and techniques;
  - knowledge and experience in use of green building principles and practices;
  - Have at least 7 years of practical experience in planning and design of similar integrated planning, infrastructure and landscape design projects;
  - Carried out at least 2 similar assignments supported with good completion certificate;

## **Engineering and Technical Team**

### **1. Structural engineer (1) assigned to the project team, must have:**

- a. university bachelor's degrees relevant to their engineering discipline.
- b. knowledge and experience in working in multi-disciplinary teams.
- c. knowledge and experience in use of green building principles and practices.
- d. 3 years' experience in similar types of assignments (submit proof); and
- e. fluent in English, with Kinyarwanda as an asset.
- f. Experience in a similar role on 2 other projects

### **2. Civil Engineer (2)**

- a. university bachelor's degrees in civil engineering discipline.
- b. knowledge and experience in working in multi-disciplinary teams.
- c. knowledge and experience in use of green building principles and practices.
- d. 5 years' experience in similar types of assignments (submit proof supported with good completion certificate); and
- e. Fluent in English, with Kinyarwanda as an asset.

- f. Experience in a similar role on 3 other projects
3. **Geo-technical, engineer (1)** assigned to the project team, must have:
- a. university bachelor's degrees relevant to their engineering discipline.
  - b. knowledge and experience in working in multi-disciplinary teams.
  - c. knowledge and experience in use of green building principles and practices.
  - d. 3 years' experience in similar types of assignments (submit proofs); and
  - e. fluent in English, with Kinyarwanda as an asset.
  - f. Experience in a similar role on 2 other projects
4. **Electrical engineer (1)** assigned to the project team, must have:
- a. university bachelor's degrees relevant to their engineering discipline.
  - b. knowledge and experience in working in multi-disciplinary teams.
  - c. knowledge and experience in use of green building principles and practices.
  - d. 3 years' experience in similar types of assignments (submit proofs); and
  - e. fluent in English, with Kinyarwanda as an asset.
  - f. Experience in a similar role on 2 other projects.
5. **Mechanical engineer (1)** assigned to the project team, must have:
- a. university bachelor's degrees relevant to their engineering discipline.
  - b. knowledge and experience in working in multi-disciplinary teams.
  - c. knowledge and experience in use of green building principles and practices.
  - d. 3 years' experience in similar types of assignments (submit proofs); and
  - e. Fluent in English, with Kinyarwanda as an asset.
  - f. Experience in a similar role on 2 other projects
6. **Sanitary (WASH) Engineer (1)** assigned to the project team, must have:
- a. university bachelor's degrees relevant to their engineering discipline.
  - b. knowledge and experience in working in multi-disciplinary teams.
  - c. knowledge and experience in use of green building principles and practices.
  - d. 3 years' experience in similar types of assignments (submit proof); and

- e. Fluent in English, with Kinyarwanda as an asset.
- f. Experience in a similar role on 2 other projects.

**7. Quantity surveyors (2)** assigned to the project team, must have:

- a. University bachelor's degrees relevant to their engineering discipline.
- b. knowledge and experience in working in multi-disciplinary teams.
- c. knowledge and experience in use of green building principles and practices.
- d. 3 years' experience in similar types of assignments (submit proof); and
- e. fluent in English, with Kinyarwanda as an asset.
- f. Experience in a similar role on 2 other projects.

**8. Agri-business expert (1)**

He /she must have at least BSc. Degree in agri-business with general experience of 10 years of experience in agriculture value chain analysis, food processing industry, business strategy and sells the field of expertise and he /she must have a proven work experience in similar assignments (with at least 3 similar projects).

**9. Agronomist expert (1)**

He /she must have at least BSc. Degree in Agriculture Sciences, crop production or Horticulture with 10 years of experience in designing and managing agriculture projects, especially around greenhouse cultivation, hydroponics, livestock rearing. and he /she must have a proven work experience in similar assignments (with at least 3 similar projects).

**10. Tourism Operations expert**

He /she must have at least BSc. Degree in hospitality management or tourism with general experience of 7 years of experience in managing operations within the tourism or hospitality industry and he /she must have a proven work experience in similar assignments (with at least 3 similar projects).

Ability to oversee daily operations, including visitor services, retail, and hospitality.

### **11. Social and environmental Expert (1)**

- A Master's degree in sociology and environmental or other Social Sciences from a recognized University/institution
- Being Registered in Social and Environmental Practising members with active membership.
- He/she should have experience in development/management of community engagement activities as well as in depth knowledge of participatory community engagement methodologies.
- He/she shall have at least 5 years of experience in implementing social safeguards arrangements on conservation and climate change projects in a large-scale landscape Project.
- Knowledge and experience in working in multi-disciplinary teams.
- have at least 5 years of practical experience in the application of social impact assessment sciences in support of similar integrated infrastructure and landscape projects;
- Have been involved in at least 2 similar assignments internationally, with at least one project in Rwanda (proof must be presented);
- Fluency in English, with Kinyarwanda and French an asset;

### **3.3 Proposed Duration of Services**

The assignment is proposed to be carried out within 18 months,

## Annexes

### **A. Green village concept**

#### **Smart Green Village Concept**

A Green Village is a process for attaining sustainable development where the local residents can live in a pleasant environment. In other words, by Green village we understand a village which can be developed economically by using natural resources in a sustainable manner, without affecting the natural environment.

The added term “Smart” to Green Village, refers to the incorporation of appropriate Information Communication Technology (ICT) capabilities for the Green Villages.

### **3. PILLARS for the integrated model Village:**

1. **Land Productivity** – to increase agricultural and livestock productivity. (Through: Irrigation, land consolidation, Kitchen Garden, Cowsheds, small livestock, forage, dams, green houses, use of fertilizers, fruits plantation, spray race,)
2. **Post-Harvest Processing and Marketing** - to assure food security and promote trade of agriculture products in internal and export sales. (Through: Agro-Processing plants, Drying sheds,)
3. **Cooperative Development** - to increase economic value and reinforce unity through joined capital and promotion of savings. (Through: Youth, women, farmers, Cooperatives)
4. **Off-Farm Employment** - to diversify and modernize Rwandan economy through creation and enhancement of sustainable off-farm employment. (Through: Agakiro, carpentry, hand-craft, welding, tailoring, weaving of basket-uduseke, )
5. **Promotion of Micro-finance and Insurance** - to increase inputs for economic expansion

and protect entrepreneurs against business risks. Through: Sacco, insurance on agricultural products,)

6. **Resettlement** - to voluntarily settle citizens for efficient service delivery and land consolidation.
7. **Rehabilitating ecosystem** – to ensure optimal utilization and sustainable management of natural resource base. (Through: Underground water tanks, drainage, modern stoves, biogas, trees plantation, gardening, dam sheets, ....)
8. **Social Protection** - to provide effective and sustainable social protection and release productive capacities of the poorest and vulnerable (Through: Financial support to vulnerable people, Mutuelle de sante, Girinka program, public works.)
9. **Infrastructure development:** to improve access to affordable services and infrastructure. (Through:
  - Transport infrastructures such as access and internal roads, helipads, suspended bridges,
  - Electricity and access to other forms of energy for improved welfare and environmental protection: hydroelectricity, solar energy and biogas
  - Clean water: Public taps, boreholes, ...
  - educational facilities such as classrooms, libraries, smart classrooms, dining halls and playgrounds.
  - Health facilities like health posts, pharmacies,
  - Business: Mini-markets, selling points, bars and restaurants, boutiques, warehouses,
10. **Promotion of ICT** - to improve access to market information and technology innovations for production (Through: Irembo services, internet fiber optics, online services like declaration of taxes, application for different services, driving licenses,
11. **Leadership Development** - to build a large cohort of community leaders who will catalyze



social cohesion and an economic revolution. (Through: Multipurpose Hall to hold different meetings, events and ceremonies, TVs, Historical and cultural events, Office of local leaders and Police...)