### TERMS OF REFERENCE

**FOR INTERNATIONAL CONSULTANCY FIRM**

<table>
<thead>
<tr>
<th><strong>TITLE:</strong></th>
<th>International Firm for Conducting Detailed Geotechnical Investigation and Design of Countermeasure Structures for landslide at Boxcut on Trongsa-Gelephu PNH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AGENCY/PROJECT NAME:</strong></td>
<td>UNDP/GCF Funded- “Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan”</td>
</tr>
<tr>
<td><strong>COUNTRY OF ASSIGNMENT:</strong></td>
<td>Thimphu, Bhutan</td>
</tr>
</tbody>
</table>

1) **GENERAL BACKGROUND**

National Highways in the country plays vital role in providing access for transportation of farm products to the market as all minor roads like Dzongkhag roads and Farm roads are connected to national highways. Bhutan as a part of fragile Himalayan region with rugged terrain, our road network is highly vulnerable to climate change impact. The result of climate change impact like extreme weather, erratic rainfall, soil erosion and flash flood trigger landslide and destabilize road slopes thereby disrupting market access.

The mandate of Department of Roads is to improve quality of life of rural population through improved access to socio-economic facilities like market, health and education facilities. However, due to constraint in technical expertise and limited budget in the department, providing climate resilient road is a major challenge.

As a part of project for 'Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan' funded by UNDP/GCF Project, the Department of Roads under Ministry of Works & Human Settlement is provided fund for mitigation of three landslides along Trongsa - Gelephu Primary National Highway (PNH) and Sunkosh - Danaga Secondary National Highway (SNH). Among the three candidate sites, the landslide at Boxcut on Trongsa - Gelephu PNH is identified to receive support from International Consultant for conducting detailed geotechnical studies and mitigation measures.

Trongsa - Gelephu PNH (240.5 km length) connects central region with southern part of the country. The people from central region use this highway for transportation of their farm products to Gelephu, one of the gateway to neighboring India. It is also one of the main route for transportation of hydro mechanical equipment for Mangdechu Hydroelectric Project in Trongsa. Over the years, flow of traffic in this highway has become erratic due to frequent road blocks. The road blocks are common during rainy season due to slope failure. The most common unstable slope locations along this highway are at Aieslip, Boxcut, Ossay and Reotala. Road block has not only caused inconvenience to the public but it has also greatly affected the economy of the country.

The Boxcut landslide is at 15 km from Gelephu and geographically located in the southern foothills 26°57'09.51"N, 90°31'33.65"E and 622m above mean sea level. This landslide damaged about 650m
length of road stretch and the area of slope damaged due to slope failure is more than 60 acres. To come up with a permanent solution to this recurring problem, the Department of Roads with financial support from UNDP/GCF project intends to outsource the assignment for conducting Detailed Geotechnical Investigation and Design of Countermeasure Structures at Boxcut landslide.

2) OBJECTIVES OF THE ASSIGNMENT

The main objectives of this study are to:

i. Conduct detailed geotechnical investigation of landslide at Boxcut and recommend three alternative countermeasure structures.

ii. Design the most suitable countermeasure structure after approval by the client, preparation of design report, detailed drawings, technical specifications, bill of quantities, cost analysis and estimation, etc.

3) SCOPE OF WORK AND KEY TASKS

The scope of work for carrying out detailed geotechnical investigation and detailed design works shall include, but not limited to the following:

1. Site study and Survey Works:
   - The prospective firms should visit the landslide area at its own cost to familiarize with the existing site conditions.
   - The tentative boundary of the landslide area and topographic survey date is provided. The overall landslide area at Boxcut is approximately 60 acres but scope of study area is not limited to surveyed boundary.

2. Desktop Study: The consultancy firm shall carry out detailed review and assessment of relevant past studies/reports/preliminary design investigation, topographical maps, geological maps, land use maps, aerial photographs, and satellite imagery of the project area. The firm shall consult the relevant stakeholders to obtain the required information of the project area for the purpose of investigation and engineering design of mitigation structures.

3. Geological Investigation: Undertake field trips to the identified area and carry out field surveys including topographic survey (if required) to confirm desk study interpretation and gather supplementary data:
   - Identify, assess and prepare instability inventory maps (landslides, erosion, debris flow, scouring, toe erosion, creep, subsidence, land degradation, rock fall, planar failure, wedge failure, toppling etc.) within the study area and indicate the level of hazard posed by the instabilities. All the instabilities identified within the study area should be mapped on 1:500 scales maps.
   - Identify, assess and prepare the material/engineering geological maps for the study areas.
   - Identify, assess and mark on map all water bodies (springs, creek, stream both seasonal and perennial, seepages, rivers etc.) that have impacts on the study area.
   - Identify and assess the strength of geological materials by conducting necessary field and laboratory tests and analysis.
   - Assess the correlations between the instabilities and geology (rock type, soil and deposits), topography (slopes), land use, hydrology (rainfall, seepages, and ground water) and determine the most significant factors that are responsible for causing the instabilities.
4. Geophysical Investigation: The study shall carry out the geophysical survey (seismic refraction test) to understand the sub surface conditions of the landslide area (ground water table, material types, depth of the sliding plane, overburden thickness etc).

<table>
<thead>
<tr>
<th>Minimum Requirements</th>
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</thead>
<tbody>
<tr>
<td>Number of Tests</td>
</tr>
</tbody>
</table>
| SRT 1200m length in total. ERT 600m length in total | • Prior to collecting seismic/electric resistivity data, field reconnaissance shall be carried out to determine the most suitable locations of profile lines.  
• The procedure for carrying out the test, recording and analysis of results and their presentation shall conform to International Standard.  
• A high-resolution seismic refraction/electrical resistivity method shall be used in all targeted areas to collect refraction/ resistivity data within a minimum accuracy of 5% of actual depths.  
• The spacing of geophones/electrodes shall be 5m and below  
• Shall maintain record of Location Name, GPS Coordinates and Date of tests carried out. |

5. Rotary Core Drilling Investigation:

- The consultancy firm shall carry out the necessary exploratory rotary core drilling works to substantiate results of geophysical investigation.
- The location of boreholes shall be marked on the ground as well as on the drawings with coordinates (Easting, Northing and Altitude).
- Shall carry out visual and tactile examination of each samples, describe material type (soil/rock) and maintain record of depth from the surface, elevation details, and photographic records of each sample. Borehole log shall be as per relevant IS Code.
- SPT shall be carried out in boreholes wherever feasible.
- The cores have to be properly kept in boxes, labeled and handed over to the client for future reference.

<table>
<thead>
<tr>
<th>Number of Borehole</th>
<th>Details</th>
</tr>
</thead>
</table>
| 4 no. of boreholes        | • Depth of borehole shall be 20 m from the natural ground level.  
• If the bedrock is determine at shallow depth by SRT, the depth of boring shall be at least 5m depth into in-site rock for confirmation.  
• Appropriate casing types and sizes shall be used to obtain best core samples.  
• Shall observe and maintain record of ground water table every day before and after work.  
• Describe Borehole Test No. / Location ID, Name of Location, GPS Coordinates and Date of Borehole tests. |
6. Geotechnical Investigation
The consultancy firm shall:
- Assess and characterize the engineering properties of in-situ soil and rock.
- Carry out trial pitting 3 m depth and collect soil samples for laboratory test in order to determine the bulk density, moisture content, grain size distribution, cohesion, angle of internal friction, plasticity indices, permeability etc.
- Conduct soil tests e.g. Gradation test, Atterberg limits, Field Density, Unit weight, moisture content and the Direct Shear Box Tests as per relevant IS or any internationally accepted standards.
- Assess and compute safe bearing capacity for design of appropriate engineering structures based on the finding of in-situ and laboratory tests results conducted on the soil samples.
- Assess and determine the strength and depth of the soil forming the slope and most likely worst-case ground water and soil moisture conditions.
- Assess location and extent of weak layers and cavities, if any, below the surface
- Carry out the slope stability analysis for design. The slope stability analysis of soil and rock slopes should include: Depth and configuration of the failures.
- Soil/rock mass classification, geotechnical strength of soil/rock materials and the configuration of soil/rock strata, including basic geological indicators (e.g. dip direction/dip) and other features such as fissures, faults, discontinuities in the case of rocks and, density, cohesion and friction angle and other characteristics in the case of soils.
- Worst-case groundwater table, surface/subsurface soil moisture conditions.
- Computation factor of safety for the slope with recommended mitigation action plan
- Assess probable settlement and probable differential settlement of the foundation.
- Assess the likely construction difficulties, risks to the slopes, structures, people involved during construction of the structures and chart out the mitigation action plan to nullify the risks.

7. Hydro-geological Investigation: The consultancy firm shall:
- Collect the meteorological and hydrological data from NCHM and analyze it prior to recommendation of mitigation structures.
- Compute the maximum probable discharge based on rainfall-runoff analysis.
- Assess and determine the extent and depth of scour for the foundation of hydraulic structures, if any is recommended.
- Assess artesian conditions, if any.

8. Detailed Design Works:
- The Consultant shall choose an appropriate type of countermeasure structures taking into consideration the findings from geotechnical investigation and importance of road.
- The countermeasure structures should be innovative technology which are efficient and applicable in Bhutanese context.
- Both structure and non-structure countermeasures proposed should be clearly marked on the mitigation plan.
9. Detailed Drawing Works:
   - The drawings should be done in an appropriate style and the scales should be suitably fixed so that they are easily readable at site or workshop by naked eye. Except for the general views, the drawings should preferably be made to the scale of 1:50 and for showing minute details to 1:20 / 1:10 / 1:5 wherever necessary.
   - Adequate number of drawings should be produced to appropriately represent all the necessary details, views, etc.
   - The detailed reinforcement schedule (if applicable) will be a part of the drawings.
   - All drawings should be made to paper size – ISO A3.
   - Except for similar components, each different component shall have separate drawings in cross section, elevation and plan.
   - All drawing dimensions shall be in metric system (i.e. meter, cm and mm)

10. Bill of Quantities:
   - Separate Bill of Quantities (BoQ) should be prepared for the structural and non-structural countermeasure.
   - The BoQ should be explicit covering all items of work. It should be as exhaustive as possible to avoid changes, additions, deletions and substitutions during execution and therefore the undesired disputes and claims.
   - The detailed technical and material specifications should be a part of the BoQ.
   - The quantities should be worked out as accurate as possible to avoid unnecessary variations during the execution of the work.
   - Availability of materials may also be specified for those that are unique in features. As far as possible, the materials should be readily available in Bhutan & India.

11. Rate Analysis and Cost Estimates:
   - The cost estimates should be appropriately worked out to indicate the approximate cost of the mitigation measure. It should be accompanied by analysis of rates wherever necessary.
   - All forms of taxes – excise duties, sales tax, royalties, etc. applicable in Bhutan and abroad when materials are imported, should be incorporated in the cost analysis.
   - The rate analysis and the cost estimate should be treated as highly confidential.

12. Technical Specifications (Specifications and Performance Requirements):
    The Consultant shall prepare a detailed Technical Specifications for all items of work taking into consideration the relevant Code of Practices and the advancement in technology.

4) DURATION OF ASSIGNMENT, DUTY STATION AND EXPECTED PLACES OF TRAVEL

The total duration for this assignment/work shall be 6 months from June to November 2020 (tentatively) and all the activities shall be completed within this time frame. The study shall also take into account the monsoon month for field work. The consultancy firm shall also work closely with the Department of Roads, GNHC and UNDP.
The tentative man days required for each key personnel are as shown in the table given below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Position</th>
<th>Place of Assignment</th>
<th>Staff - days</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Foreign Staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Geotechnical Engineer/Team leader</td>
<td>Home</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Field</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>Geologist/Material Engineer</td>
<td>Home</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Field</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>Geophysicist</td>
<td>Home</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Field</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>Structural Engineer</td>
<td>Home</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Field</td>
<td>7</td>
</tr>
</tbody>
</table>

5) FINAL PRODUCTS

5.1 The firm shall submit to the Client the following reports and documents at the time and manner indicated as per the following table:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Types of Report</th>
<th>Deadline</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inception report</td>
<td>1 month after the date of signing of the agreement</td>
<td>Should describe work plan, study methodologies, role of key experts, current progress status etc. Required to submit 3 nos. color hard copy and a soft copy.</td>
</tr>
<tr>
<td>2</td>
<td>Draft Final Geotechnical Report</td>
<td>3.5 months (after the date of signing of the agreement)</td>
<td>The consultant shall submit 3 Nos. hard copy and 1 No. softcopy of draft geotechnical report with all relevant maps including recommendation of three alternative countermeasure structures. The locations of recommended structures are to be reflected in the map and indicate the sequence of structures to be implemented. The consultant shall make power point presentation to client within two weeks after submission of draft report. The client and other stakeholders present during the presentation shall select one of the most suitable countermeasure structures recommended by the</td>
</tr>
</tbody>
</table>
5.2 The final report shall consist of the following documents:

- Three sets of geotechnical report which shall include the general geological conditions, test results, photographs of cores and results of analysis and interpretation, design parameters for soil and/or rock, maps (geological map, morphological map, geotechnical engineering map, Hydrological map, slope map and mitigation plan.
- Three sets of detailed engineering and design report including structural analysis and design of mitigation structures, technical approach & methodology for construction, etc.
- Three sets of detailed design drawings signed in original by the Design Engineer and the Consultant.
- Three sets of Technical specifications printed and bound.
- Three sets of Bill of Quantity, cost estimate and rate analysis for all items of work.
- A soft copy of all above reports should be submitted both in editable and PDF format.

**6) PROVISION OF MONITORING AND PROGRESS CONTROLS**

The consultancy firm would be provided with topographical survey datasets (digital copy) of the study area. The consultant shall work closely with Client's Officials. The client may also, at its discretion, consider fielding of its representative to accompany the consultant’s study team during fieldwork upon receipt of written request from the consultant. However, the responsibility of completing the assignment successfully will lie solely with the consultant.

The consultant will also receive technical guidance and support from the UNDP Regional Technical Advisor, Bangkok Regional Hub, UNDP Country Office, and Project Management Unit under GNHC. The progress of the consultant will be monitored based on the timelines and milestones indicated in the inception note.
7) DEGREE OF EXPERTISE AND QUALIFICATIONS

The consultancy firm shall engage the following key personnel as shown in the table below apart from other support staff to carry out the assignment:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Experts</th>
<th>Qualifications / Experiences</th>
<th>Tasks / Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Geotechnical Engineer/ Team Leader</strong></td>
<td>- Masters OR Bachelor Degree in Geotechnical Engineering or Engineering Geology with a professional experience in the relevant field (geotechnical investigations, testing etc.).&lt;br&gt;- Must be familiar with all the standard laboratory and field testing procedures.&lt;br&gt;- Should have practical experience in carrying out geotechnical and hazard assessment, practical experience in various slope stabilization technique.&lt;br&gt;- Should be familiar with Slope Stability Analysis Software.</td>
<td>1. Will function as the Team Leader.&lt;br&gt;2. Will be responsible for the implementation of all activities including timely completion.&lt;br&gt;3. Shall guide, supervise, coordinate and monitor the works of other experts.&lt;br&gt;4. Provide geo-technical backstopping on designs, technical standards and specifications.&lt;br&gt;5. Undertake all geotechnical investigation works.&lt;br&gt;6. Prepare report and present to a forum of stakeholders.&lt;br&gt;7. Prepare map using GIS software.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Geotechnical / Material Engineer</strong></td>
<td>- Masters OR Bachelor Degree in Civil Engineering / Geotechnical Engineering with work experience in geotechnical and material testing.&lt;br&gt;- Should be fully familiar with the acceptable study methods, flood studies, engineering best practices and must have experience of successfully using various methods of studies in different situations.</td>
<td>1. Collect, review, and confirm information/data about geology, geo-hydrology and meteorology of the study area.&lt;br&gt;2. Provide protocols for material testing; assist with test formats, procedures of quality control tests required for the study area.&lt;br&gt;3. Determine the requirements of mitigation structures.&lt;br&gt;4. Work closely with the Design/structural engineer to design the mitigation structures.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Geophysicist</strong></td>
<td>- Masters or Bachelor degree in science with a major in geophysics, geosciences.&lt;br&gt;- Should be well experience in geophysical surveying, data processing and analysis using various methods and result interpretation.</td>
<td>1. Carryout geophysical survey of landslide area both electrical resistivity imaging (ERI) and Seismic refraction test (SRT).&lt;br&gt;2. Determine sub soil strata and groundwater condition at different parts of the landslide area.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Design / Structural Engineer</strong></td>
<td>- Masters in Structural Engineering OR Bachelor Degree in Civil Engineering with professional experience&lt;br&gt;- Should have sufficient experience in structural analysis, design of mitigation structures, technical</td>
<td>1. Review the existing relevant documents, reports, designs, information / data, etc.&lt;br&gt;2. Advice the Team leader to carry out necessary surveys and investigations required to prepare the detailed engineering designs</td>
</tr>
</tbody>
</table>
of the proposed mitigation structures.
3. Prepare and finalize design concepts and design criteria in close consultation with the Team Leader.
4. Prepare detailed engineering designs for the proposed mitigation measures using AutoCAD software.

Note: Since this geotechnical investigation requires GIS based mapping, spatial (GPS) data collection and data interpretation and analysis, at least one of the above key experts shall have sound knowledge in GIS Analysis and Mappings skills OR firms can propose separate GIS expert(s) as well.

8) CRITERIA FOR SELECTION OF THE BEST OFFER
The criteria which shall serve as basis for evaluating offers will be:

- Combined Scoring method – where the qualifications and relevant work experience of individual consultant/organization will be weighted a maximum of 70% and combined with the price offer which will be weighted a max of 30%.
- Please note that the details of past works on similar assignment needs to be submitted with the proposal.

The Technical Proposal shall be evaluated out of 100 points based on the criteria and the points system given in the following table. Please note that the consultancy firm need to score at least 70% to qualify from the Technical Capacity. The technical score will then be converted to 70% and combined with the financial score of 30% to evaluate the lowest evaluated bidder.
Criteria | Points
--- | ---
1. Specific experience of the Consultant relevant to the assignment/GCF Project | 10
2. Adequacy of the proposed methodology and work plan in responding to the Terms of Reference | 30
   a. Technical approach and methodology for conceptual design | 20
   b. Work plan | 5
   c. Organization and staffing | 5
3. Key professional staff qualifications and competence for the assignment: | 60
   1. Team Leader (Geotechnical Engineer / Engg. Geologist) | 19
      a. General Qualification | 7
      b. Adequacy for the assignment | 9.5
      c. Experience in region | 2.5
   2. Geotechnical / Material Engineer | 15.5
      a. General Qualification | 6
      b. Adequacy for the assignment | 7.5
      c. Experience in region | 2
   3. Geophysicist | 10
      a. General Qualification | 4
      b. Adequacy for the assignment | 5.5
      c. Experience in region | 0.5
   4. Civil / Structural Engineer | 15.5
      a. General Qualification | 6
      b. Adequacy for the assignment | 7.5
      c. Experience in region | 2

9) BREAKDOWN OF ACTIVITIES BY QUANTITY

The following break-up activities would guide the consulting firms for offering their financial proposals. All the activities must be carried out as per the technical specifications described above in the scope of work. The identifications and finalization of all exploration sites shall be done in consultation with the Procuring Agency.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description of Activities</th>
<th>Unit</th>
<th>Qty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>FIELD TESTS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pit Excavations / Trial Pits.</td>
<td>Nos.</td>
<td>4</td>
<td>As per Technical Descriptions</td>
</tr>
<tr>
<td>2</td>
<td>Geophysical Test: -Seismic Refraction Test (SRT). -Electric Resistivity Test (ERT)</td>
<td>Mtr.</td>
<td>1200 Mtr.</td>
<td>600 Details given in the map.</td>
</tr>
<tr>
<td>3</td>
<td>Rotary Core Drilling &amp; any test feasible in the process of drilling like SPT and measurement of ground water level should be done simultaneously.</td>
<td>mtr.</td>
<td>80</td>
<td>4-boreholes max depth 20m.</td>
</tr>
<tr>
<td>B</td>
<td>LABORATORY TESTS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Geotechnical Lab Test for Rock Core Sample- Unconfined Compression Tests (UCS)</td>
<td>Nos</td>
<td>8</td>
<td>2-Samples from each borehole</td>
</tr>
</tbody>
</table>
2 Geotechnical Lab Test for **Trial Pit Samples** (Sieve Analysis, Bulk Density, Specific Gravity, Plastic & Liquid Limit, Consolidation & Direct Shear, and Proctor Compaction Test).

<table>
<thead>
<tr>
<th>Nos</th>
<th>Field Study:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Field investigation and assessments in the study area, including site identification for field tests, site data collection/recording observed information, field mappings such as geology, engineering geology, geomorphology, identifying landslides, fault zone, weak geology, water body, flood level observation, ground subsidence, erosions, drainage, validation of slope etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deliverables/ Outputs</th>
<th>Target Due Dates</th>
<th>Payment Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signing of contract</td>
<td>1st June 2020</td>
<td></td>
</tr>
<tr>
<td>Submission of Inception Report</td>
<td>30th June 2020</td>
<td>15%</td>
</tr>
<tr>
<td>Submission of Draft final geotechnical report with three alternative conceptual design of mitigation measure structures</td>
<td>15th September 2020</td>
<td>35%</td>
</tr>
<tr>
<td>Submission of draft final report on countermeasure structural design</td>
<td>31st October 2020</td>
<td></td>
</tr>
<tr>
<td>Approval of final report</td>
<td>30th November 2020</td>
<td>50%</td>
</tr>
</tbody>
</table>

10) **PAYMENT TERMS**

Indicative timeline together with payment terms are reflected below:

10) **AWARD OF CONTRACT**

The consultants who fulfill the requirements will be assessed based on a combined scoring of:

- Technical evaluation comprising of 70%, and
- Financial evaluation of 30%.
11) FINANCIAL PROPOSAL

Please indicate fee structure: All-inclusive lump-sum fee in the financial proposal.

**Note:** Payments will be made upon delivery of the services specified in the TOR and certification of acceptance by the UNDP. The consultant/organization must factor in all possible costs in the “All Inclusive Lump Sum Fee/Daily fee” financial proposal including consultancy and professional fee, DSA for field visits, honorarium, communication cost such as telephone/internet usage, printing cost, transportation, ad-hoc costs, stationery costs, and any other foreseeable costs in this exercise. No costs other than what has been indicated in the financial proposal will be paid or reimbursed to the consultant. UNDP will only pay for any unplanned travel outside of this TOR and Duty Station on actual basis and on submission of original bills/invoices and on prior agreement with UNDP officials.

12) RECOMMENDED PRESENTATION OF OFFER

Please submit the below preferred documents with the presentation of offer:

a) Cover letter with expression of interest;

b) Personal CV indicating all experience from similar projects, as well as the contact details (email and telephone number) of the consultancy firm/team and at least three (3) professional references;

c) Technical proposal with clear methodology;

d) Financial proposal with breakdown of the cost items.

e) The firm will be required to submit a Performance Security amounting to ten percent (10%) of the Contract Price

The proposal should be submitted in electronic format by **Wednesday 15th April 2020** to procurement.bt@undp.org.
Google Earth image showing boundary of the study area.

Figure 1: Google Earth image showing the study area