



(A Subsidiary of Grow Asia)

TERMS OF REFERENCE

Project Name:	GIS Land Mapping and Soil Sampling & Testing – Markham Valley Agriculture Economic Corridor
Location:	Markham, Morobe Province
Supplier	Expression of Interest (EOI)

1. BACKGROUND

Grow PNG, is a nonprofit founded in 2019, and based in Lae, Papua New Guinea, the gateway to the Markham Valley Agricultural Corridor. Grow PNG’s vision is to accelerate the growth of the agriculture sector in the Markham Valley by enabling smallholder households to increase their income by 20% within eight years.

With fertile soils and abundant groundwater, the Markham-Ramu Valley boasts over 50,000 hectares of land capable of supporting a variety of agriculture and livestock development. However, this asset is underutilized, with only 10% currently being cultivated. There are many reasons for the low utilization, among them, a lack of GIS mapping, and land use and soil suitability awareness for agricultural farming. This information is vital if landowners are to encourage third party investment on their land.

As part of Grow PNG’s overall vision, working through its smallholder engagement programs with communities in the valley, landowner-farming communities are becoming aware that GIS land mapping and soil analysis and data can help them make informed decisions. This information supports applications for financial assistance to develop their land and encourage third-party investment.

Grow PNG is seeking to engage a certified GIS and soil testing and analysis service provider to carry out GIS and agronomy-soil testing and analysis on selected farming locations in the Markham - Ramu Valley. This work will include soil chemical content analysis, soil density, and hydrology indicators, identification of land boundaries, soil and leaf sensing through drone monitoring, create identification profile for up to 20 separate Landowner groups, create a database for farmers and register all information /data collected for traceability purposes.

The GIS land mapping and soil testing analysis will complement existing soil and GIS information in the valley to generate interest from farmers and agribusiness for partnerships in agricultural investment. It will establish reference points on current challenges and enable a wider range of future development opportunities within this important economic growth corridor.

This study will build on efforts from other partners and stakeholders already on the ground ranging from agribusiness, smallholder communities, and logistics within the commodities economic value chains ecosystem.

2. OBJECTIVES

The service provider will be responsible for ensuring that the GIS land mapping and soil test result and data report will be reported in a manner that will:

1. Inform the decision of which crops/plants can be farmed, fertilizer requirements, environmental risk, and effects.

2. Enable calculation of yield per hectare to enable crop forecasting, planning of upkeep practices, harvesting and milling for the farming community.
3. Enable landowner farming community to seek funding opportunities to develop their fertile land to correctly match crop and soil types for optimum yield.
4. Allow potential agribusiness developers and the farming community to make informed decisions around land and crop selection and planning investments in the valley.
5. Inspire new investment in the valley.
6. Provide the data required to drive policymakers, business leaders, farm groups, and civil society to work together on Agri - sectoral development.

The service provider will supply a report outline, followed by a draft report with data, then submit their final report

3. SCOPE OF WORK

The service provider will work closely with Grow PNG Project Leader and landowner-farming communities by:

1. Obtaining GIS land mapping and soil samples in areas selected by Grow PNG that accurately represent the field from which they were taken
2. Obtaining GIS land mapping and soil samples and necessary data and information about the sites
3. Conducting analysis for nutrient, clay, silt, sand, and organic carbon content
4. Advising the variation that exists within the field and how the nutrients are distributed spatially.
5. Conducting weekly review of the work with Grow PNG project leader
6. Preparing a project completion report together collected data with recommendations and submit to Grow PNG Ltd
7. Potential investors may require a presentation of the data from the service providers in the next two years, see tender section for more information

FOOTNOTE. The report and all collected data will remain the intellectual property of Grow PNG Ltd

4. TARGETED GROUPS

Grow PNG is preparing communities to negotiate partnerships with agribusiness developers. As included in the project scope, selected sites from the various landowner farming communities will be offered to carry out the study on behalf of the rest of the community. Grow PNG Project leader will work closely with the Service provider on this project.

5. DELIVERABLES

The Service provider is responsible for ensuring, the key deliverables of this assignment are delivered as follows.

1. A detailed methodology and work plan developed and shared with Grow PNG for approval.
2. Test on site selected by Grow PNG estimate up to 100 physical locations.
3. GIS Mapping and Soil Test study analysis conducted and completed.
4. GIS and Soil test study analysis report is written, inclusive of:
 - bulk density of each sample,
 - estimated from total organic carbon, macro, and micronutrients of importance.
 - and soil enrichment
5. GIS land mapping analysis inclusive of:
 - Identification of land boundaries
 - Soil and leaf area by drone supplied by the successful contractor.
 - Create identification profile for each test sites/area.
 - Create a database and register all information /data collected for traceability purposes.
6. The final report including recommendations from the soil analysis and GIS land mapping be submitted to Grow PNG in accordance with the scope of work.
7. Review the report with Grow PNG and assist Grow PNG to present the report to the stakeholders in accordance with the scope of work

- Presentation of the data in Lae for potential investors.

6. DURATION AND TIMING (Key Milestones with Dates)

Activities	Feb 24	Mar 24	Apr 24	May 24
1. A detailed methodology and work plan developed and approved				
2. Commence visit to selected sites for GIS mapping, digging and soil testing and sampling in Markham				
3. Conduct nutrient analysis				
4. Data Analysis and Report Writing				
5. Outline, Draft, Data and Final Reports Submitted for review				
6. If required, four presentations, lasting up to two hours each, to potential investors				

7. TENDER

All questions or clarifications regarding this TOR must be in writing and submitted to info@growpng.org by COB **February 8th 2024**.

Technical proposal must include:

- Technical approach - The technical approach should state clearly the offeror's understanding of the requirements of this TOR as well as the proposed approach to accomplish the contract objectives and deliverables. Offerors should keep in mind the geography of the place of performance and any travel that may be required to accomplish the work. Clarity, completeness, and directness are imperative. Elaborate formats are not desirable. This section should be no more than 4 pages.
- Management and Staffing Plan. Please describe how proposed staff will work collaboratively to achieve the offeror's proposed technical approach to the scope of work. The offeror should include a management and staffing plan including both key and non-key personnel for activities along with details on the roles and responsibilities of the staff. Single page CVs for key personnel may be included in an annex to the technical proposal and will not count against the page limit. This section should be no more than 2 pages.
- Past Performance. Describe the organization's previous experience within the technical area for projects of the same or similar scope and size. Offerors must include details demonstrating their experience and technical ability, including those of proposed consortium members, in implementing the technical approach/methodology and the detailed work plan. This section should be broken down to address each deliverable and be no more than 10 pages.
- References. Offeror shall list at least three contracts its company has held over the past five (5) years for the same or similar work. This section should be one (1) page.

8. QUALIFICATION AND COMPETENCY REQUIRED.

Education and Experience.

- Registered organization with a minimum of 3 years' experience in GIS land mapping and soil survey
- An understanding of GIS and soil development processes and of the influence of relief, geology, climate, vegetation, and soil organisms on soil development.
- Be able to share some success stories of similar tasks/assignments carried out previously

Competencies

- Excellent analytical, report writing, and communication skills.
- Able to use remotes sensing technology to estimate the leaf area index
- Excellent command of the local language, customs and traditions of the project area.
- Ability to prepare publications, reports, and presentations.
- Ability to work with a multidisciplinary and multicultural team.

Tools

1. Drone, and drone license

9. CONTRACTUAL CONDITIONS

The work will commence in February 2024 or as soon as it's practical and ends April 2024 unless an extension is agreed in writing.

- Prepare an overall work plan at the beginning of the assignment
- Share and discuss the work plan with Grow PNG Project Lead for inputs where necessary
- Commence implementation as soon as the work plan is agreed and approved by Grow PNG management

10. ROLE OF GROW PNG

Grow PNG will conduct weekly review of implementation activities and provide oversights and guidance through the Project Lead.

Email applications: info@growpng.org

Applications should be addressed to:

The Country Director

Grow PNG Ltd

P O Box 4425, Lae, Morobe Province, PNG

Level 1, Office 2.5, Mama Anda Building, 4th Street, Top Town

Landline No: 4720448

Website: <https://www.growpng.org/>

Authorized by:

Grow PNG Ltd