Islamic Republic of Afghanistan
Civil Aviation Authority

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TERMS OF REFERENCE

FOR

THE FEASIBILITY STUDY FOR LOGAR INTERNATIONAL AIRPORT

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1. BACKGROUND

1.1. Logar province is located at the center of the country and have 60 km distance south of Kabul, with a surface area of 5000 km^2, sharing the Kabul river basin. Kabul and Nangarhar are located to the north, Paktia to the southeast, Wardak and Ghazni to the west of the province. It is divided into seven districts (Baraki Barak, Charkh, Khoshi, Kharwar, Mohammad Agha, Azra and Puli Alam) and contains hundreds of villages. Logar's capital city is Puli Alam. It is on the main road leading to Paktia and Khost provinces.

Puli Alam has been reconstructed since the fall of the Taliban. The high way from Logar to Kabul was constructed in 2006, significantly reducing travel time to the capital Kabul. Additional projects including numerous schools, radio stations, government facilities, and a major Afghan National Police base also reconstructed. Like most Afghan cities, there is little municipal planning or services in logar province. Electricity is provided by diesel generators, and wells are the primary source of drinking water.

Logar province population is approximately 0.5 million, which is multi-ethnic and a tribal society. The overall literacy rate in Logar province is 30% .There are around 168 primary and secondary schools in the province catering for 81,538 students. There are nearly 2,082 teachers working in schools in the Logar province. There are several girls schools in the province, mostly located in Koshi and Pul-e-alam districts.

The main natural resources in this province are Ainak Copper mine in Mohammad Agha district and two water reservoirs of Kharwar & Surkhab areas. The water from these two reservoirs is used for irrigation purposes.

1.2. Geographically Logar can be generally described as a relatively flat river valley in the north and central regions, surrounded by rugged mountains to the east, south, and southwest. The district of Azra, in the east, consists almost entirely of mountains, while travel to the Paktia Province to the south is limited to the Tera Pass, a 2896 m high road that was recently completed as part of the international reconstruction effort in Afghanistan. The Kabul-Gardez Highway runs north-south through Logar Province, from the Mohammed Agha District south to the Paktiya Province border.

Map of Afghanistan with Logar highlighted
Coordinates (Capital): 34.0°N 69.2°E

1.3. The proposed Area for the development of a new international airport is located at a distance of 10 km at the south of Mohammad Agha District, approximately 38 km from Kabul capital, and 3 km far to the east of Kabul-Gardez Highway. The Area is surrounded by rugged mountains on two sides. The proposed area is shown on the map attached a separate file as MAP-1.

1.4. The Aviation industry within Afghanistan is particularly important for the national economy, as the air transport is the only viable passenger transport mode for travel between major destinations for most purposes. Without access to these services, our business would not be able to compete in global economy. The Civil Aviation sector is managed by the Civil Aviation Authority of the Islamic Republic of Afghanistan where the civil aviation has recently separated from the ministry of Transportation as an independent Governmental Authority. The young and energetic leadership has taken some important decisions to enhance the national income through Aviation sector.

Air transport is a key component in the development of the country's economy and is closely linked to the development of the tourism industry. The project is justified

because of the present and future requirements as under:

i) to improve the conditions of the existing civil aviation facilities and to establish safe operating procedures that conform with ICAO (International Civil Aviation Organization) standards,
ii) to provide a safe and reliable mode of transport, and
iii) to support the Government's strategy to stimulate the country's economic growth by providing air transportation to facilitate the mobilization of social, economic, and administrative resources.

It is expected that the Kabul Airport might not be sufficient to Handle the future demands of the growing Capital therefore Civil Aviation Authority is planning to develop an international Airport near to Kabul City at Logar province in order to fulfill the future requirements of the City and region as a whole.

The principle outputs of the Feasibility study will be used as a base for the development of future master plan for the Airport Construction and the development of a suitable financing and implementation plan.

2. OBJECTIVES OF THE ASSIGNMENT

2.1. The main objective of this project is to develop an international airport at least to fulfill the future 20 years demands and requirements of civil aviation for the capital and as a whole for the central zone of the country, where the present Hamid Karzai International Airport at Kabul might not fulfill the future demands of the passengers from the central zone taking into consideration the rapid growth in population and development of the country.

Second objective of the project is increasing domestic connectivity, through the provision of reliable and standard civil aviation facilities in accordance with the ICAO (International Civil Aviation Organization) standards, Central zone Social and Economic growth through the connectivity, the development of the tourism industry and increase in income levels.

In order to plan and execute the project successfully, it will be important to undertake Feasibility study of the proposed site for the development of Logar International Airport. This feasibility study will assist the Afghanistan Civil Aviation Authority to achieve project objectives and targets.

3. SCOPE OF SERVICES

3.1. Specifically the objective of this feasibility study is to assess the feasibility of the proposed site for the development of Logar international airport. At least the following factors should be considered in this feasibility study:

i. **Regional Plan:** Evaluation of the proposed site with respect to the regional plan.

ii. **Airport security and protection:** assessment of the natural protection from the air raids and to be used as a combat field.

iii. **Proximity to other Airports:** taking into account the volume of air traffic.

iv. **Ground Accessibility:** Public transportation facilities, the time required to reach the airport from the center of the city taking into consideration the traffic congestion at different timings.

v. **Topography of the Area:** Natural features like ground contours, trees, streams etc.

vi. **Obstructions:** manmade or natural obstructions for the approach. Preparation of obstacle limitation surface taking into consideration the ICAO recommendation.

vii. **Visibility:** visibility reducing factors like fog, smoke and haze.

viii. **Wind:** wind data i.e., direction, duration and intensity of wind and proposed better orientation of runway best on wind rose diagram.

ix. **Noise Nuisance:** Taking into account the residential and industrial development at present and future.

x. **Grading, Drainage and soil characteristics:** Investigation for Grading, drainage flooding costs based on the soil characteristics and topography of the site.

xi. **Future Developments:** considering that the air traffic volume will increase in future, more numbers of runways have to be provided for an increased traffic and more facilities may be required for processing passengers traveling. Anticipation of future development.

xii. **Availability of Utilities from Town:** Assessment of the various facilities.

xiii. **Economic Consideration:** Economical Aspects taking into consideration various factors.

xiv. **Site Evaluation based on Airport Configuration:** Evaluation of the site taking into account configuration of Runway, Taxiway, Aprons, Holding bays and location of major facilities.

3.2. **Surveys to be conducted:**

3.2.1. **Traffic Survey:**

For Determination of the amount of air traffic including the anticipated traffic for future, taking into consideration other airports in the vicinity of the proposed airport specifically Hamid Karzai International Airport.

3.2.2. **Meteorological Survey:**

Determination of direction, duration and intensity of wind, rainfall, fog, temperature and barometric pressure etc. preparation of wind rose diagram for the alignment of Runway taking into consideration the obstacle limitation surface.

3.2.3. **Topographical Survey:**

Topographic survey is an essential and important phase of feasibility study as the result of this survey following maps should be prepared taking into account all necessary measures:

a) Preparation of contour map showing other natural features such as trees, streams etc.
b) Preparation of map showing such constructed objects as pole lines, building, roads etc.

3.2.4. **Geotechnical Survey:**

In Geotechnical investigation of the proposed airport site at least following investigations and activities should be considered:

- Geotechnical/physical properties soil
- Shear strength parameter of soil
- Consolidation characteristics
- Collapsibility/collapse coefficient of soil
- Hydraulic conductivity/Permeability of soil
- Bearing capacity tests at site (Penetration, Plate load Tests etc.)
- California Bearing Ratio (CBR) Test
- Compaction characteristics of soil
- Boring method and Bore hole depth and spacing for sampling
- Sampling method (Type of sampler to be used for various tests)

Feasibility of site taking into consideration the geotechnical characteristics of site soil and its improvement cost. Recommendations regarding improvement

of site soil for various configuration of Airport like runways, taxiways, aprons, stands, parking, terminal etc. Investigation for the availability of geotechnical

materials to be used for the site soil improvement at vicinity of proposed area.

3.2.5. **Hydrological / Drainage Survey:**

In Hydrological survey of the proposed airport site at least following investigations and activities should be considered:

a) Determination of the Storm water quantity for drainage using contour maps and rainfall intensity data.
b) Locating possible outlets for drain water in the vicinity of the site.
c) Investigation of the possibility of intercepting or diverting the natural streams following the site under consideration.

3.2.6. **Material Survey:**

To ascertain the availability of suitable construction materials at a reasonable cost and the mode of transportation of these materials to the site.

3.2.7. **Economical Survey:**

Assessment and analysis of economic impact, benefits to their surrounding communities as well as economic growth and productivity at the wider regional and national level.

Economic impact analysis based on four broad categories:

- Direct impact: Employment and income that is wholly or largely related to the construction and operation of an airport.
- Sub-regional (induced) impact: Employment and income generated in the economy of the defined sub-region of airport and the development of the surrounding area.
- Indirect impact: Employment and income generated in the economy by the direct and induced employees of the airport.
- Catalytic impact: Employment and income generated in the wider economy by the role of the airport in improving the productivity of businesses and in attracting economic activities such as investment and tourism.

The economic internal rate of Return and the financial internal rate of return to be calculated taking into account capital, operation, periodic and routine maintenance costs, etc. Traffic Forecasts are to be based on appropriate market research in addition to those developed under the tourism study. The economic feasibility study is to include among others:

a) An analysis of the expected travel cost savings in relation to the impact of the airports on the economies of their influence areas.

b) Pricing of airport services.

c) An analysis of the effect of service pricing on the distribution of project benefits between the Government, Residents, and nonresidents.

The financial analysis to include, among others, projected income and expenditure statement (in current prices), fund flow statement for Afghanistan Civil Aviation Authority for the duration of the project implementation period and three year after project completion.

3.2.8. **Social Survey:**

Assessment of the impact on the social fabric of both the region and the nation. Based on the social survey, data collection, and consideration of global and local experience all range of social impacts both negative and positive impacts shall be considered.

This survey shall take into account the following social impact factors:

- Living standards and quality of life
- Social and cultural benefits resulting from enhanced connectivity
- Social benefits of employment opportunities
- Land prices

3.2.9. **Environmental Survey:**

The project has to comply with requirements of World Bank Safeguard Policy and Environmental and Social Management Framework (ESMF) developed in line with Afghanistan Environmental Impact Assessment Regulation. An Environmental Impact Statement (EIS) should be prepared and presented in globally accepted Format. Identification of Impact on Physical Resources (Soil and Geological, Impact on Water Demand and Waste Water Discharge, Air Quality Impacts), Ecological Impact (Impact Associated with Site Development and Impact Related to Facilities Operations) and Socio-Economic Impacts (Measures to relocate private households and provisions of options for accommodation through Government institutions).

3.2.10. **Accessibility Survey:**

Determination and collection of Data regarding the routes and highways connecting various areas to the proposed Airport site in consideration of future development of city and their accessibility to the Airport specifically New Kabul City development in the future. The survey must include the future plan of the Ministry of Public Welfare, Kabul city municipality and Logar province municipality. Consultant shall present appropriate recommendations.

3.3. **Drawings to be Prepared:**

i. Topographical plan showing contours, locations of trees, streams, buildings, roads, property lines etc.

ii. Obstacle limitation surface map showing safe approach zones and turning zones for the aircrafts.

iii. Tracing the routes on the national map connecting various areas to the proposed Airport site in present and future as per the national plan.

4. DELIVERABLES AND REPORTING

The primary outcome sought from this work is a full feasibility study of the Logar International Airport. Opportunities to enhance and develop the New International Airport in Logar Province, Economical and financial growth and development of the Central Zone may arise, subject to the delivery of the Feasibility studies.

Detailed study guidelines are attached as Annex A; a summary of the Structure of the study is provided as below:

- **Introduction and Background Data Base**
- **Methodology – Approach, Data collection activities and techniques**
- **Airport Market Analysis**
- **Site Analysis**
- **Financial Analysis and Operating Scenario**
- **Conclusions and Recommendations**

5. DURATION OF THE SERVICES

The timeframe for the feasibility study is estimated at 6 months, with the duration of specific activities recommended by the ACAA is as follows:

- Preliminary Site Visits, mobilization – 2 weeks
- Surveys, data collection and meetings – 4 months
- Mapping and Analysis – 1 month
- Report writing and finalization – 2 weeks

Note: The consultant has a free hand to schedule the activities as per their convenience.

6. QUALIFICATIONS AND EXPERIENCE OF THE KEY STAFF NEEDED

6.1. The project is seeking a reputable firm to undertake feasibility studies for the Logar International Airport. Collectively, the study team should have a strong background in Feasibility studies for Aviation/Transportation infrastructures and in the following areas:

- Research and feasibility study expertise
- Experience in the Airport planning, design and expansion is preferable
- Strong skills in survey and consultation
- Strong analytical skills
- Strong Drafting and mapping skills
- Fluency in local languages is preferable
- Fluency in English language
- Knowledge of the local culture and customs of the particular area is preferable

6.2. **Key Experts Requirement:**

Key personal qualification and Experience required is as described in the following table:

S.No.	Key Expert Position	Minimum Academic Qualification	Minimum Experience	preferable
01	Project Manager	B.E./B.Tech./B.Sc in Civil Engineering/ Architecture/ any particular field of Civil Engineering	10 years in managing large transport infrastructure with 5 years' experience in Airport Planning and Design	M.E./M.Tech/Msc Civil Engg. Airport Design and Planning/ Construction management and Planning, Experience in airport construction management is preferred
02	Airport Planning & Design Engineer	B.E./B.Tech./B.Sc in Civil Engineering/ Structure/Architecture/ any particular field of Civil Engineering	8 years in Structure Analysis and Design, 2 year in Airport Planning and Design	PHD, M.E./M.Tech/Msc Civil Engg. Airport planning and Design/ Structure Experience in airport Planning and Design is preferred
03	Geotechnical Engineer	B.E./B.Tech./B.Sc in Civil Engineering/ Geotechnical/ Soil Mechanics / Soil Engineering	8 years in Geotechnical investigations, Soil Testing and Sampling	PHD, M.E./M.Tech/Msc Civil Engg. Geotechnical/ Soil Mechanics/ Soil Engineering, Experience in airport projects is preferred

04	Hydrologist	B.E./B.Tech./B.Sc in Civil Engineering/ Hydrology/ Hydraulics / Water resources	8 years in Hydrological investigations, Drainage, water supply	PHD, M.E./M.Tech/Msc Civil Engg. Hydrology/ Hydraulics/ Water Resources, Experience in airport projects is preferred
05	Survey Engineer	B.E./B.Tech./B.Sc in Civil Engineering	8 years in surveying	M.E./M.Tech/Msc Civil Engg. Experience in airport projects survey is preferred
06	Environmental Expert	B.E./B.Tech./B.Sc in Environmental Science	8 year in Environmental Studies and research on projects funded by major international donor agencies	PHD, Master Degree in Environmental Science or any related discipline, Experience in airport projects is preferred
07	Sociologist	B.A. Sociology or any related field	8 years in social studies on projects funded by major international donor agencies	PHD, Master Degree in Sociology or any related discipline, Experience in airport projects Social impact Evaluation is preferred
08	Economist	B.Com. / B.A. / B.Sc. Economics	8 years in Economic studies on projects funded by major international donor agencies	PHD, Master Degree in Economics or any related discipline, Experience in airport projects Economic impact Evaluation is preferred
09	Aeronautical Engineer	B.E/B.Tech/B.Sc Aeronautical Engineering	8 years Experience in Aeronautical Engineering	M.E./M.Tech/M.sc Aeronautical Engineering
10	Transportation Engineer	B.E./B.Tech/B.Sc Transportation Engineering	8 years Experience in Transportation Engineering	M.E./M.Tech/M.sc Transportation Engineering Experience in Airport Projects is preferred

7. OBLIGAITONS, DUTIES AND RESPONSIBILITIES OF THE CLIENT AND CONSULTANT

i. Consultant

The consultant will be responsible for organizing the work and delivering the outputs of the assignment. They will work closely with the governmental and nongovernmental organizations to collect and analyze data and undertake all necessary measurements, and report on the progress of key activities. The milestones and reporting mechanisms should be pre-defined prior to the start of the assignment in Co-ordination with ACAA.

Prior to the completion of the assignment, the consultant will hand over the feasibility study and related data to ACAA.

Submission of the following reports:

- **Inception Report:** Within three weeks of commencement of the assignment the inception report shall contain the consultant's findings with respect to available data and documents and provide the consultant's work methodology and detailed program for conducting the feasibility study.
- **Monthly reports** are to be submitted detailing the physical and financial progress of the consultant's activities.
- **Draft Feasibility Study Report:** At the end of third month of the assignment the draft report shall contain all findings, data analysis and recommendations in support of the airport upgrade project, including a justification for the upgrade and evidence of the project viability through a comparison of the estimated investments for constructing the airport and expected benefits following the project completion.
- **Final Feasibility Study Report:** At the end of the assignment, following the draft report review and the consultant's presentation of the study findings and recommendation to the project key stakeholders, the final report shall incorporate all comments and revisions requested by ACAA.

In case consultant is not performing the material tests in their own laboratories; Material Testing should be performed by a reputable laboratory after being approved by the ACAA. Reports from the same should be forwarded to the ACAA prior to the final Report of feasibility study.

The consultant must have ease of access to the site by establishing a site office in logar province in order to perform the feasibility study in a most effective manner.

ii. **ACAA** (Afghanistan Civil Aviation Authorities)

ACAA will oversee and monitor overall progress, ensure that activities are completed to a high standard, and provide input and comments on the final report. ACAA may also arrange few meetings with the consultant. Any available data related to the assignment will be shared with the consultant. In case of need ACAA will co-operate and help the consultant in collection of data from the governmental agencies related to the feasibility study of the proposed site; the cooperation and help will be in the form of issuing official documents to the governmental agencies to cooperate the consultant in data collection.

8. QUALITY ASSURANCE

The ACAA will perform the quality assurance review of the consultant's work to verify that proper criteria, regulations, laws, codes, principles and professional procedures have been used.

9. PAYMENT SCHEDULE

The consultant shall meet the full operational costs of its field investigation and survey teams including all travel, remuneration, insurance, emergency medical aid, accommodation, office and facilities, communications, Security and all required facilities for proper operation of various teams. Costs shall include any administrative and technical support from the consultant's head office.

Payment to the consultant shall be made on the basis of monthly invoices submitted by the consultant to the ACAA and in accordance with actual progress of the consultancy Activities as per their proposed work plan certified and approved by the ACAA.

The final payment to the consultant will be processed after feasibility study final report approval by the ACAA.

ANNEX A.

STUDY GUIDELINES – FEASIBILITY STUDY

The project is expected to contribute significantly to air transport, social and economic development of the region and communities around the project site. Expansion and diversification of income generating activities, jobs creation, and migration of investors to the area will increase due to the airport construction. The exact economic and social benefits we aim to attract into the project will be determined after the feasibility phase.
Through the feasibility study, sufficient details and working mechanisms for the project area could be established.

The proposed structure for the feasibility study is outlined as below:

i. **INTRODUCTION AND BACKGROUND DATA BASE**
   - General Setting
   - Socio-Economic Profile
   - Environmental Inventory
   - Area Aviation
   -Summary

ii. **METHODOLOGY AND TECHNICAL APPROACH**
   - Approach
   - Data Collection Techniques
   - Data Collection Activities

iii. **Airport Market Analysis**
   - Existing Market Descriptions
   - Aviation Forecasts
   - Facility Requirements
   - Feasibility Analysis
   - Summary and Conclusions

iv. **SITE ANALYSIS**
   - Airport Search Area
   - Identification of Alternative Sites
   - Site Selection Criteria
   - Evaluation of proposed and Alternative Sites
   - Engineering Factors

- Environmental Factors
- Site Analysis Summary
- Conclusion

v. Financial Analysis and Operating Scenario

- Airport Layout
- Development Cost Estimates
- Cash Flow Analysis
- Summary

vi. Conclusions and Recommendations