

**EXPRESSION OF INTEREST**  
For

**Visibility Chart Development for  
Tribhuvan International Airport**

**Consulting Firm/Joint Venture:**

.....  
.....  
.....

**Prime Consultant (in case of a JV):**

.....  
.....

Employer:  
Government of Nepal  
Ministry of Population&Environment  
Department of Hydrology and Meteorology  
Naxal, Kathmandu

March 2017



**Government of Nepal**  
**Ministry of Population and Environment**  
**Department of Hydrology and Meteorology**

Naxal, Kathmandu

Notice No: 4/MFD/DHM/073-74

First Date of Publication: 20/11/2073

**Expressions of Interest (EOI)**

1. The Government of Nepal, Department of Hydrology and Meteorology (DHM) invites EOI (Expressions of Interest) for the purpose of short listing the qualified, eligible and experienced Companies/firms and or their joint ventures for **Visibility Chart Development for Tribhuvan International Airport** works.
2. The budget to this purpose has been allocated by the Government of Nepal (GON) for the fiscal year 2073/074.
3. Experienced, eligible and interested Consulting Firms or companies are invited to submit their EOI, either alone or in joint venture with other firms with a certified copy of Consultancy /Company Registration Certificate, VAT and Tax Clearance (2072/73)/ Tax Return Submission receipt for the last fiscal year.
4. EOI documents could be obtained free of cost from DHM upon request during office hour on all government working days within the 15<sup>th</sup> day of the first date of publication of this notice or can also be downloaded from the website: <http://www.dhm.gov.np>. The instruction to the consultant, prescribed format, evaluation criteria, scope of the work and duration of the study and other details of the project are mentioned in the EOI. Only lead firm may obtain EOI form mentioning the names of all members of Association/JV and submitting Association/JV agreement.
5. Applications for EOI must be clearly marked **Visibility Chart Development for Tribhuvan International Airport** and shall be submitted in sealed envelopes by companies or their joint venture received by the due date and within the specified time in the presence of the applicant or their authorized representatives. Absence of any applicant (or their authorized representative), however, shall not obstruct or prevent the opening of the EOI in any way, which must be delivered to the following address within the given time below.  
Last Date of EOI Submission:- 6/12/2073 & 12:00 noon  
Date of EOI opening :- 6/12/2073 & 01:00 pm
6. Certified evidences of the client reference indicating satisfactory completion of the projects along with the cost of consulting services in NRs and date of completion of the assignment only will be counted.
7. In case the day of submission of the EOI falls on a public holiday, it shall then be submitted on the following working day at same hour. Only the short-listed Consulting Firms shall be invited for RFP (Request for Proposal). During the RFP process, the consulting firm/companies will be selected in accordance with quality and cost Based Selection procedure (QCBS).
8. DHM reserves the right to shortlist any or reject all of the Firms without assigning any reasons whatsoever. Further information or clarification can be obtained from DHM during office hours.

Procurement Unit

Department of Hydrology and Meteorology

Naxal, Kathmandu

E-mail: [shivaamet@gmail.com](mailto:shivaamet@gmail.com), [spd\\_acharya@yahoo.com](mailto:spd_acharya@yahoo.com), [cbhetuwal@yahoo.com](mailto:cbhetuwal@yahoo.com)

Website: [www.dhm.gov.np](http://www.dhm.gov.np)

# Visibility Chart Development For Tribhuvan International Airport

## 1. INFORMATION ON THE CONSULTING FIRM

Information shall be provided in the following format. No field shall be left vacant. In case of a joint venture, the same form shall be filled by each of the JV partners separately. The form shall be submitted in the time, date and venue as mentioned in the published notice.

### 1. General

Name of Firm	Address	Telephone	Email	Fax	JV Percent

Out of the above list, ..... will be the Prime Consultant.

### 2. Financial Capacity

Annual turnover over the last three years are as follows. The auditor's report/tax clearance certificates are attached.

Fiscal year	Turnover (Rs)

### 3. Overall Experience\*

Overall experiences of the firm in relevant work during last ten years are as follows (Work completion certificates are attached).

Name of Project	Project	Client	Contract amount (excluding VAT)	Year of completion	Description of work carried out

### 4. Specific Experience\*

Experiences of the firm in related field during last ten years are as follows. Work completion certificates are attached.

Name of Project	Project	Client	Contract amount (excluding VAT)	Year of completion	Description of work carried out

\* The firm/s shall produce certified evidences of the client reference indicating satisfactory completion of the mentioned projects along with the cost of consulting services in NRs and date of completion of the assignment are required for the consideration of that project for evaluation. Sublet worksor assignment as a sub consultant shall not be considered for evaluation.

### 5. Human Resources

Human Resources in the company

Staff Member	Details	
	Permanent/part time	Name of personals

### 7. Other Resources

Other relevant resources available with us are as follows. The office layout, invoice/bill of equipment/vehicle/software/computer is attached.

Resource	Unit	Total Available	Engaged by Works on Hand
Office area	m2		
Telephone lines	line		
Photocopy, Printers	set		
High capacity Computer	set		
vehicles(Four wheel Drive)	no		

Authorized signature:

Seal:

Date:

## **ANNEX 1: INFORMATION TO THE CONSULTING FIRM**

### **General Information**

<b>Purpose of inviting the EOI:</b>	The main purpose shall short-list suitable consulting firms or engineering/surveying firms/companies for development of visibility chart so that proposals could be invited from them only. However, the client may extend the short-list to include additional relevant consulting firms which are capable of giving the desired output.
<b>Format and Signing of Application:</b>	Applicant intending to file an application in response to this EOI should submit an “Application together with the duly completed EOI form providing all the information required therein after signing in by Authorized Representative of Consulting Firm or company (in case of Joint Venture, Authorized Representative of Lead Firm) with Company’s seal in every page of EOI forms.
<b>Minimum eligibility of the firm:</b>	Registered engineering/surveying firms/companies, consulting firms/company registered at VAT office and tax clearance certificates.
<b>Deadline for submission of EOI:</b>	at or before 12 Noon (NST-Nepal Standard Time) within 6/12/2073
<b>Number of copies to be submitted:</b>	Two
<b>Joint Venture:</b>	A firm may apply to be short-listed alone or in joint venture with other firms. However once short-listed, JV partners are unchangeable.
<b>Duration of completion:</b>	Duration to complete the works will be 60 days from the signing of the contract agreement.
<b>Information from the Client:</b>	In due course of time, the shortlist shall be published on the Client’s notice board, at the website: <a href="http://www.dhm.gov.np">www.dhm.gov.np</a> . The client shall mail the short-list to each of the firms/JV submitting the EOI and initiate the process of RFP without waiting for the receipt from the firms that they have received the short-list.

**ANNEX 2: EVALUATION CRITERIA****(I) Eligibility Criteria (Pass / Fail)**

<i>Sr. No.</i>	<i>Eligibility Criteria</i>	<i>Requirement</i>	<i>Compliance</i>	<i>Remarks</i>
1.	Corporate Registration	Mandatory	Yes/ NO	Pass/Fail
2.	Tax Clearance (072-73)	Mandatory	Yes/ NO	Pass/Fail
3.	Vat Registration	Mandatory	Yes/ NO	Pass/Fail
4.	Minimum Years of Standing	The applicant or the Lead partner of J/V applicant must have min. 5 years of standing.	Yes/ NO	Pass/Fail

**II) Ranking Criteria (Out of 100%)**

<b>Experience of Consultant (70 marks) <i>Work, completed during last 10 years</i></b>		<b>Office Set up and Logistics (10 marks)</b>	<b>Availability of Staff (10 marks)</b>	<b>Financial Turnover Last three years (10 marks)</b>
<p><b>Overall experience of Firm. (40 marks) 5 Projects</b></p> <p>Work Experience of firm in land survey software developments and other survey related work etc.</p> <p>(5x8=40 marks)</p>	<p><b>Work Experience in Specific Projects. (30 marks) 2 Projects</b></p> <p>Work Experience of firm in related field (Hydrological/Meteorological survey, Climate related survey, aviation meteorology related work and scientific study related to hydrology and meteorology)</p> <p>(2x15=30 marks)</p>	<p><b>Office equipment, space, communication facilities, Vehicle and related Software (10 marks)</b></p> <p>1. Office equipment &amp; work related software -5 marks (equip-2, soft.-3 marks)</p> <p>2. Office Space -3 marks.</p> <p>3. Communication facilities -2 marks</p>	<p><b>Related Technical Human Recourse (10 marks)</b></p> <p>1. GIS Expert -1 numbers – 2 marks</p> <p>2. Meteorologist – 1 numbers – 2 marks</p> <p>3. Land Survey Expert – 1 number – 2 mark</p> <p>4. Civil Engineer – 1 number – 2 Mark</p> <p>5. Computer Operator – 1 Number – 1 Mark</p> <p>6. Secretary – 1 Number – 1 Mark</p>	<p><b>Financial Turnover of the consultant within last three years</b></p> <p>1. Less than one million - 4 marks</p> <p>2. UP to two million- 6 marks</p> <p>3. More than two million- 10 marks</p>

NOTE: The consultant should score more than 60 percent on the overall ranking criteria as mentioned above to qualify for short listing

## **Project Description:**

### **1. Background**

Visibility is the ability to see an object in the atmosphere. In terms of the weather, visibility is the greatest horizontal distance, at which selected objects can be seen, identified, and/or measured with or without instrumentation.

ICAO Annex 3 Meteorological Service for International Air Navigation contains the following definitions and note:

- a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;
- b) The greatest distance at which lights of 1,000 candelas can be seen and identified against an unlit background.

Increasing attention has been paid to the concept of visibility as rising air pollutants lead to impaired visibility. Specifically, haze is one term commonly used to describe an impaired visibility.

Prevailing visibility is the value reported in non-automated surface observations. A human observer determines it by identifying objects and landmarks at known distances in a full 360 degree circle around the observation point. The greatest visibility observed over 50% or more of the 360 degree area is the prevailing visibility. If there is a sector of the 360 degree area that is significantly different from the prevailing visibility, the system may add a remark reflecting that difference.

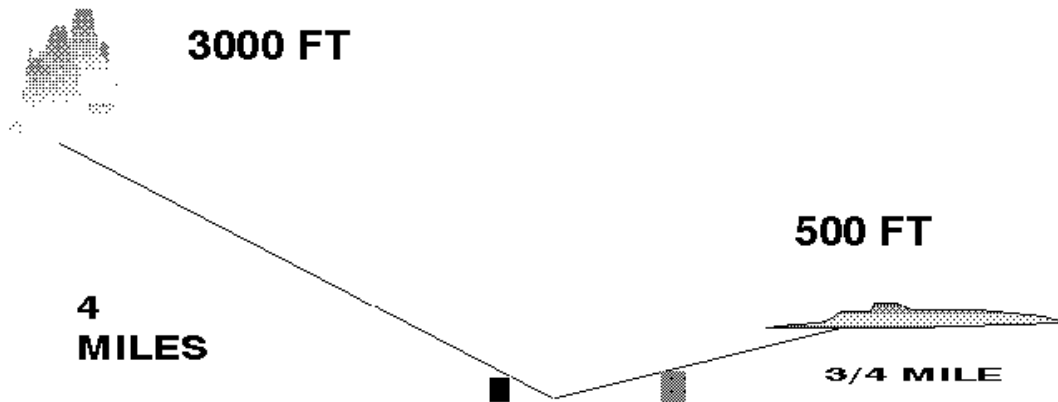
Visual contrast is a key factor in determining how far and clearly one can see. Ground observers have the benefit of seeing dark objects against the lighter background of the sky. A pilot's view is generally toward the ground, providing a darker, more limited contrast background. This lack of contrast makes it much more difficult to identify objects. Surface visibility may not always match well with flight visibility.

The human observer on or near the ground often has more restricted visibility than pilots. The ground observer may not see the true horizon when determining visibility, but rather looks slightly upward over trees, ridges, and buildings. This upward view can cause the observed horizon to merge with low stratus and force an artificially low visibility. If an observer's view is blocked within 8 degrees of the horizon, a cloud layer at 500 feet would preclude the observer from seeing targets more than 0.75 mile from the observation. A cloud layer at 3,000 feet would create a 4 mile limit.



# MAXIMUM VIEWING DISTANCE WITH 8 DEGREE ANGLE LIMITATION

NOT TO SCALE



In aviation visibility is important as it is needed by aviation for safe landing and take off of aircrafts. In this context, Met office provides visibility to aviation authorities and also transmits worldwide in regular intervals in its METAR and SYNOP reports.

Since Tribhuvan International Airport (TIA) is Nepal's sole international airport, the visibility here is important for domestic as well as international aviation and as TIA is situated in a valley, the elevations of the hills surrounding this valley is equally important for aviation. Hence it is important that a proper visibility chart be developed for TIA.

## 2. Objective

The major objective of the study is to prepare a visibility chart for the specified aerodrome to aid in the weather observations taken from the respective MET observatory to disseminate accurate information to the weather and aviation authorities.

## 3. Study area

Tribhuvan International Airport, Kathmandu

## 4. Scope of Work

- Review all relevant literatures.
- Identify the accurate locations of various landmarks and/or buildings around the aerodrome using GPS, topographic maps/data, aerial photographs, satellite image or any other suitable means
- Calculate precise distances between the said landmarks/buildings and MET observatory located inside the aerodrome using any tools necessary

- Calculate the elevation of hills that are visible from the aerodrome and that might play a role in determining the height of the base of the cloud as seen from the MET Observatory.
- Prepare visibility charts for the specified airport
- Prepare elevation profile for the hills around TIA
- Provide limitations and suggestions.

## 5. General Requirements

- The visibility chart should be easily understandable with the landmarks/buildings properly labelled with suitable legends.
- The chart should be editable and amendable
- The color coding/legend on the chart should be customizable
- All raw data, maps and the final product (visibility chart) should be handed over to MFD in digital format which can be edited later.
- Relevant training should be provided to the MFD staffs to enable them to update the digital copy of visibility chart.
- The margin of error should be less than 10 m up to 1 km, less than 50 m between 1 to 5 km and less than 100 m above 5 km
- A visibility chart should be generated using Google maps or any other open source maps to compare with the visibility chart prepared by the firm.

## 6. Technical personnel

The consultant must have following technical personnel to execute the project

1. Civil Engineer
2. Meteorologist
3. GIS Expert/Surveyor
4. Land Survey Expert
5. Computer Operator
6. Secretary

## 7. Schedule

The following schedule is proposed for the completion of the study

- Inception Report: within 14 days from the contract date  
 Draft Report: within 30 days from the contract date  
 Final Report: within 60 days from the contract date

## 8. Procedure of payment

Submission and approval of Inception Report	20 %
Submission and approval of Draft Report	30 %
Submission and approval of Final Report	50 %

*(5% of the amount will be retained from each payment)*

## 9. Output of the study

- DHM expects the following outputs from the consultant/s.
- Inception Report: One copy
- Draft Report: One Copy
- Final Report: Two copies
- Visibility Chart: visibility charts and elevation chart with mentioned specifications
- Digital copy of all the reports listed above as well as all raw data, maps and the final product (visibility chart) in digital format which can be edited later.

## 10. Deliverables

- One copy of Inception Report shall be prepared and submitted to MFD no later than 14 days after the signing of the contract agreement. This report shall contain the finalized work program and a general approach and methodology that the Consultant proposes to conduct the work. MFD will review the Inception Reports submitted by the consultant and will send its comments, if any, to the consultant.
- A presentation shall also be given by the consultant at MFD at the time about the tools the consultant plans to use and the methodology the consultant would be following.
- One copy of Draft Reports shall be prepared and submitted to MFD no later than 30 days after signing the contract agreement. The Draft report of study shall include details as formulated in the scope of work.
- Two copies of Final Report shall be prepared and submitted to MFD within 60 days of the signing of the contract by the consultant.
- A presentation shall be given by the consultant at the time of submission of final report at MFD to the technical staffs of the MFD along with any other professionals MFD deems necessary to invite. The presentation shall include the methodology implemented by the consultant and the tools that the consultant used to complete the work. It shall also contain a slideshow of images depicting the various stages of the study.
- The consultant should prepare and submit the final report by incorporating all the comments and suggestions, if any, from MFD/DHM.
- Visibility charts, two copies, shall be printed in A0 size (wall mountable) with proper labels and legends for easy identification.
- Elevation chart for the hills around TIA shall be printed in A3 size (wall mountable) depicting the distances to the hills from TIA clearly marked.
- A digital copy for all the visibility charts and the elevation chart shall be provided by the consultant preferably in a clearly labelled optical disk.
- A one day training program to be held at MFD to teach the forecasters how to amend and edit the visibility chart if and when required.
- A one day training on how to prepare visibility chart based on Google maps or any other open source maps.

## 11. Data, Local Services, and Facilities to be provided by the Client

All the necessary meteorological data for the study will be provided by the client.