

**Kannur International Airport Limited
Kara-Peravoor P.O
Mattannur, Kannur-670-702**

NOTICE INVITING QUOTATION

NAME OF WORK: OBSTACLE LIMITATION SURFACE SURVEY FOR KANNUR INTERNATIONAL AIRPORT, KERALA.- SH:CONDUCTING OBSTACLE LIMITATION SURFACE SURVEY, INCLUDING THE PROPOSED RUNWAY EXTENSION, PREPARATION OF RELEVANT AERONAUTICAL CHARTS, ESTABLISHMENT OF BASELINE AND SUITABLE GRID SYSTEM FOR DEFINING THE COORDINATES OF VARIOUS AREAS.

1. Sealed lump sum quotations are invited on behalf of Kannur Airport from reputed consultant/agencies having specialized experience for the above mentioned work at the following address:

**Managing Director
Kannur International Airport Limited
Kara-Peravoor P.O
Mattannur, Kannur-670 702**

2. OFFER AND SCOPE OF WORK:

The scope of services to be rendered by the Consultant has been detailed in enclosed Annexure-I. The Consultant has to quote a Lump sum fee for the work.

3. The last date of receipt of quotation is **09 April 2021**.
4. The work is to be carried out by the Contractors and agencies having adequate expertise in the field of Obstacle Survey & Aeronautical Charts and who are thoroughly familiar with the International Civil Aviation Organization (ICAO) & Director General of Civil aviation (DGCA) regulations including relevant ICAO Annexes & DGCA Civil Aviation Requirements (CAR), since the survey & Chart work has to strictly meet the requirements of ICAO & DGCA. The firm should have enlistment in the panel of AAI for the purpose of OLS.
5. The Contractors and agencies must have successfully executed at least three works of similar nature consisting of Obstacle Survey and Aeronautical Charts for minimum three airports during the last 7 years.
6. The area and location indicated in the scope of work is tentative and liable to vary upto an extent of $\pm 10\%$. The Contractor shall be bound to execute the additional work, if any, on the same terms and conditions. No compensation will be paid in case of variation in area or length.

7. The Contractor shall be in a position to deploy a survey Team (Equipped with a Total Station Set and DGPS receiver). The details of team's composition, names, qualifications and experience of the staff proposed to be deputed to be given along with the offers. The list of equipment including Total Station, Auto Levels and "Differential Geodetic dual frequency GPS" receiver (DGPS) proposed to be deployed by the company along with their types and specifications should also be clearly mentioned in the bid.
8. For survey work, high precision survey equipments should be used. The least count of total station / theodolite and other survey equipments should be minimum 1 second (Horizontally / vertically).
9. The total time for completion of Work is 60days, seven days from the date of award of work shall be considered as the date of start of work. The successful contractor will have to organize the work at site within a week of issue of Letter of award and field work shall be completed within one month.
10. The Agency should submit an Earnest Money Deposit (EMD) of Rs. 25,000 (Twenty Five Thousand) in the form of a demand draft / banker's cheque, payable to Kannur International Airport Limited, Mattannur, Kannur along with the quotation. EMD of successful party(s) will be retained as fixed initial Security Deposit and the EMD of unsuccessful renderers shall be refunded within one month of finalization of tender. EMDs must be in the form of Demand Draft / Bankers cheque only. Quotations received without the requisite EMD shall be summarily rejected.
11. The contractor will not be allowed to further sub-contract any part of the work allotted to them.
12. Kannur Airport reserves the right to reject any or all tenders without assigning any reason thereof.
13. All work shall be done to the desired accuracy and standards as per governing specifications and sound professional practices for topographical obstacle surveys to meet the Standards & Recommendations of ICAO & DGCA and also CAR compliance.
14. Unsatisfactory performance of the contractor(s) or failure to adhere to any of the conditions stipulated in the tender/contract documents shall attract forfeiture of the Security Deposit. In addition, Kannur Airport reserves the right to terminate the entire contract or a part of it and get that executed at Contractor's risk and cost.

15. Terms of Payment

Consultants would be paid an amount as quoted by him as per Schedule of Work **Attachment 'B'** of contract plus GST as applicable. The invoices will be paid by Kannur International Airport Limited (KIAL) after certification by Operating Dept, TDS will be deducted at source from the contractor. In general no intermediate payment shall be made and only first and final payment shall be made on completion of work and submission of final survey report and related drawings, documents as per detailed scope of work as per **Annexure -I** and subject to approval of AAI and DGCA. 10% will

be deducted towards security deposit which will be released after 3 months from the successful completion of work. However partpayment can be considered once the documents are submitted to AAI for vetting.

Encl: Annexure-I – Detailed Scope of Work
Attachment-B-SCHEDULE OF WORK
Master Plan of Kannur International Airport
Approach area of Runway 07
Sketch of future apron
The existing obstructed chart.

Scope of Work

The following survey works are to be carried out by the contractor for extension of existing runway 3050m to 4000m: with standard DRA, RESA and CAT I approach lighting system.

1. Survey Work: OLS area is established for existing runway 3050mx45m. For the Phase-2, runway extension is planned from 3050m to 4000m at 07 side including ORA, RESA and standard Cat-I approach lights of 900m.

- 1.1 Establishment of baseline and suitable grid system for defining the coordinates of the various areas covered by survey work.
- 1.2 The survey work is required to be carried out by taking the reference from the Aerodrome Reference Point (ARP) of Kannur Airport, or from the Centre of the Runway for determining the location and elevation of all the objects.
- 1.3 Geographical coordinates for the project should be in WGS-84 System. All the elevation should be in Meters above AMSL and should be related to the elevation of the ARP or to the Centre of the Runway.

1.4 Runway Strip Area & Transitional Surface Area(Beyond 3050m to 4000m)

Identification of all man-made as well as natural structures / features (Roads, buildings, high ground, electric/telephone lines, towers / chimneys, nallahs / water streams / rivers, hills etc.) falling in the runway strip area and in transitional surface area.

1.5 Approach Surface Area

Approach surface areas of 07 directions of the runway is to be surveyed.

The survey will include identification of all man-made as well as natural structures / features (Roads, buildings, high ground, electric/telephone lines, towers / chimneys, nallahs / water streams / rivers, hills etc.) falling in the approach area of runway-07 side and establishing their location and elevation (Top & base) on a plan. The objects are required to be shown along with their location and elevation (Top & base) in the following Manner.

- a) **Distance 0-500 m** - all objects at airport level to be shown
- b) **Distance 500-1000 m** - all objects with more than 5 m height from airport level and all objects having top elevation more than runway elevation + 5 m AMSL to be shown.
- c) **Distance 1000-2000m** - all objects with more than 10 m height from airport level and all objects having top elevation more than runway elevation + 10 m AMSL to be shown.

Four or five prominent / highest trees in the group of trees in radius of 150 m may be shown (Instead of showing all trees). In case of building/houses, four or five prominent / highest buildings / houses in the radius of 150 m may be shown (Instead of showing all buildings).

- d) **Distance 2000-6600m**- all objects with more than 20 m height from airport level and all objects having top elevation more than runway elevation + 20 m AMSL to be shown. Four or five prominent / highest trees in the group of trees in radius of 150 m may be shown (Instead of showing all trees). In case of building/houses, four or five prominent / highest buildings / houses in the radius of 150 m may be shown (Instead of showing all buildings).
- e) **Distance 6600-15000m** - all objects with more than 75 m height from airport level and all objects having top elevation more than runway elevation + 75 m AMSL to be shown. Four or five prominent / highest trees in the group of trees in radius of 150 m may be shown (Instead of showing all trees). In case of building/houses, four or five prominent / highest buildings / houses in the radius of 150 m may be shown (Instead of showing all buildings).
- f) **Distance 15 Kms-20 Kms**- all objects with more than 75 m height from airport level and all objects having top elevation more than runway elevation + 75 m AMSL to be shown.
- g) **Distance 20 Kms-60 Kms**- all objects with more than 100 m height from airport level and all objects having top elevation more than runway elevation + 100 m AMSL to be shown. (This may be given from the available Maps)
- h) **Hill Features**- Hill features should be shown by marking peak of the hill and a few prominent contours

1.6 Inner Horizontal Surface & Conical Surface Area

Identification of all man-made as well as natural structures / features (Roads, buildings, electric/telephone lines, towers / chimneys, nallahs / water streams / rivers, hills etc.) of height more than 30 m from airport level and all objects having top elevation more than aerodrome elevation + 30 m AMSL falling in the inner horizontal surface & conical surface area as shown in the enclosed sketch and establishing their location and elevation (Top & base) on a plan. Four or five prominent / highest trees in the group of trees in radius of 150 m may be shown (Instead of showing all trees). In case of building/houses, four or five prominent / highest buildings / houses in the radius of 150 m may be shown (Instead of showing all buildings).

1.7 Outer Horizontal Surface Area and Beyond upto 20 Kms.

Identification of all man-made as well as natural structures / features (Roads, buildings, electric/telephone lines, towers / chimneys, nallahs / water streams /

rivers, hills etc.) of height more than 75 m from airport level and all objects having top elevation more than aerodrome elevation + 75 m AMSL falling in the outer horizontal surface area as shown in the enclosed sketch and establishing their location and elevation (Top & base) on a plan. Four or five prominent / highest trees in the group of trees in radius of 150 m may be shown (Instead of showing all trees). In case of building/houses, four or five prominent / highest buildings / houses in the radius of 150 m may be shown (Instead of showing all buildings). Similar all areas beyond OHS upto 20 Kms should also be surveyed and all objects having top elevation more than aerodrome elevation + 75 m AMSL falling in the outer horizontal surface area as shown in the enclosed sketch and establishing their location and elevation (Top & base) on a plan.

1.8 A few prominent bench-marks with clear description of the location showing the latitude, longitude and elevation etc. should be established in survey areas for future reference purposes.

1.9 In case of elevation of man-made objects such as building, OHWT (Overhead Water Tank) etc. the elevation of the protruding rod, antenna should be shown alongwith top elevation of permanent structure. In case of hills, base and top elevation of hills should be given with vegetation and without vegetation.

1.10 Accuracy of survey data is to be followed as given below:-

Within the Airport Boundary & in Transitional Surface

- a. Location (Lat. & Long.) ± 1 m
- b. Elevation ± 5 cm

In other area

- a) Location (Lat. & Long.) + 3 m
- b) Elevation + 10 cm

1.11 All measurements shall be taken by using EDM / total station / GPS or other electronic measuring devices (And not by tape measurements).

1.12 After collection of data, calculation should be done to work out the extent of obstruction formed as per the ICAO Annex 14 and as per DGCA CAR by each object located within the various obstacle limitation surfaces. It should also be worked out whether the obstruction would cause any threshold displacement of runway and other effects caused due such obstructions.

1.13 It is proposed to extend the runway at Kannur International Airport to **4000x45M** from **3050 x 45 M**. The feasibility of such proposal should be examined by calculating the revised extent of obstructions caused by such extension. The Aeronautical charts should also be prepared to show the proposed extension. The possibility of operation of **A380** type of Aircraft should also be examined within the operational area according to the standards recommended by ICAO/CAR

- 1.14** An elaborate Survey Report should be prepared showing details of survey work including a table showing the location of all significant objects around the airport lying within various Obstacle Limitation Surfaces (OLS) pertaining to the planned runway extension area , their Geographical coordinates in WGS-84 System, distances and bearings from the ARP/ Centre of runway (For objects located within the approach funnel their distances & Bearings from the Runway strip, along the Runway Centre line and lateral distance), Elevation AMSL & height AGL, name of OLS, Permissible Elevation, Extent of obstruction if any, action required to be taken for removal of obstruction etc.). The above table should also show the effect of runway extension on various objects located in different Obstacle Limitation Surfaces (OLS).

2. Aeronautical Charting Work

The following charts should be prepared in AutoCAD & PDF file, and the datashall be provided as per requirements on CD and in the form of hard copies (5 Nos.).The Charts shall be prepared in accordance with the ICAO Annex-4 and DGCA CAR Civil Aviation Requirement (CAR), Section 9 – Air Space and Air Traffic Management, Series 'G', Part I, Issue II dated 8th January 2010. (The above CAR is available on DGCA Website <http://dgca.nic.in>). The existing Aeronautical Charts duly verified and validated by AAI to be revised based on runway extension from 3050mx45m to 4000mx45m.

a. Grid Map:

Grid Map is required to be prepared by covering all aerodrome area in scale of 1:5000 or in any other suitable scale with gridlines and height chart.

b. Aerodrome Chart:

This chart shall depict essential operational information of the Aerodrome and the Aerodrome data to facilitate Ground movement of aircraft from the aircraft stand to the runway andfrom the runway to the aircraft stand. This should be prepared as per ICAO Annex-4 & as per DGCA CAR available on DGCA Website <http://dgca.nic.in>.

c. Approach Charts:

Approach Charts are required to be prepared by covering all approach area of runway 07 in view of 4000m runway in scale of 1:5000 (or 1:10,000 or in any other suitable scale) with gridlines and obstacle table. Approach Charts to be prepared showing the list of obstacles in two columns as per the notified strip (AIP) and also as per the ICAO Annex-14.

d. Take Off Climb Surface Chart:

Take off Climb Surface Charts are required to be prepared by covering all takeoff Climb Surface area in scale of 1:5000 (or 1:10,000) with gridlines and obstacle table.

e. Aerodrome Obstacle Type 'A' Chart:

This chart shall depict a plan and profile of each runway, any associated stop way or clearway, the take-off flight path area and obstacles (1.2% Slope). The horizontal scale shall be within the range of 1:10,000 to 1:15,000 and the Vertical Scale 10 times the horizontal scale. This should be prepared as per ICAO Annex-4 & as per DGCA CAR available on DGCA Website <http://dgca.nic.in>.

f. Aerodrome Obstacle Type 'B' Chart:

This chart in the scale range of 1:10,000 to 1:20,000, shall be prepared to provide information to satisfy the functions of the determination of minimum safe altitudes/heights including those for circling procedures; procedures to be used in the event of an emergency during take-off or landing; the application of obstacle clearing and marking criteria; and d) the provision of source material for aeronautical charts. This should be prepared as per ICAO Annex-4 & as per DGCA CAR available on DGCA Website <http://dgca.nic.in>.

g. OLS Chart:

Obstacle Limitation Surfaces (OLS) Chart is required to be prepared showing Transitional surface, Inner Horizontal Surface, Conical Surface & Outer Horizontal Surface, This Chart is required to be prepared by covering objects of vertical significance in and around the aerodrome and also all prominent landmarks such as highways, railway lines, prominent hills & HT lines etc. in the scale of 1:50000 with gridlines and height chart.

h. Revision of Master Plan of airside facilities:

Master Plan of Kannur International Airport for the operational area to be revised based on the plan of runway extension to 4000m. This should be prepared as per ICAO Doc 9137-Aerodrome Design Manual & as per DGCA CAR available on DGCA Website <http://dgca.nic.in>.

i. Rescue & Fire Fighting Chart (RFF Chart):

A chart covering an area of 8 Kms around an airport should be prepared for use by Rescue and Fire Fighting purposes.

j. 30 NM Chart:

A chart covering an area of 30 NM around the airport should be prepared for use by designing Instruments approach to land procedures. The data for this chart should be based on the OLS Survey (Within 20 Kms) and beyond 20 Kms the data may be used from available Survey of India Topo Sheets and other maps.

k. Aircraft Parking and Docking Chart for future Apron:

This chart provides flight crews with detailed information to facilitate the ground movement of aircraft between the taxiways and the aircraft stands and the parking/docking of aircraft. This should be prepared as per ICAO Annex-4& as per DGCA CAR available on DGCA Website <http://dgca.nic.in>.

3. Re-survey of obstacles reported in the existing OLS survey map after height reduction/removal:

Details of obstacles reported in the last OLS survey which are brought within the permissible limit is furnished below:

1. BSNL Cellphone Mast, Nr PRNSS College, Mattannur. Infringement-70.44m, IHS.
2. IDEA Cellphone Mast, Nr PRNSS College, Mattannur. Infringement-24.50m, IHS.
3. Airtel Cellphone Mast, Nr PRNSS College, Mattannur. Infringement-22.54m, IHS.
4. Vodafone Cellphone Mast, Palayod, Mattannur. Infringement-31.25m, IHS.
5. Vodafone Cellphone Mast, Palayod, Mattannur. Infringement-6.93m, IHS.
6. Idea Cellphone Mast, PanayathanParambu, Mattannur. Infringement-19.37m, HIS.
7. Aircel Cellphone Mast, Thalasseri Irikkur Road, Mattannur. Infringement-3.79m, HIS.
8. Airtel Cellphone Mast, Pazhassi Dam Road, Mattannur. Infringement-21.68m, HIS.

Re-survey of the above obstacles and revised OLS survey are to be conducted and survey report to be submitted for onward submission to AAI for developing new approach procedures.

The consultant need to co- ordinate with AAI for the vetting of the OLS survey conducted by them. Any clarification/details as sought by AAI/DGCA shall be provided by the agency without any extra claim till the survey details/maps are vetted by DGCA/AAI. The agency needs to coordinate and complete all process with AAI for the verification and validation of re-survey data without any extra cost.

SCHEDULE OF WORK

NAME OF WORK: REVISED MASTERPLAN FOR KANNUR INTERNATIONAL AIRPORT, KERALA - OLS SURVEY - SH: CONDUCTING OBSTACLE LIMITATION SURFACE SURVEY, INCLUDING THE PROPOSED RUNWAY EXTENSION, PREPARATION OF RELEVANT AERONAUTICAL CHARTS, ESTABLISHMENT OF BASE LINE AND SUITABLE GRID SYSTEM FOR DEFINING THE COORDINATES OF VARIOUS AREAS.

Sl.No	Description of work	LUMPSUM FEE IN RUPEES (EXCLUDING GST)	
		IN FIGURES	IN WORDS
1	Conducting the obstruction survey and preparation of relevant aeronautical charts, which includes establishment of baseline & suitable grid system, Runway strip area and Transition surface area, approach surface area, inner horizontal surface & conical surface area, outer horizontal surface area & beyond upto 20 Kms, aeronautical charting work. The chart shall be prepared in accordance with ICAO Annex-14 and DGCA CAR Civil Aviation requirement as defined in the scope of work, using latest equipment such as total station/theodolite with the help of expert professional Surveyor. All as per the detailed scope of work as given Annexure-1.		

Sign of the agency