MINISTRY OF NATIONAL PLANNING AND INFRASTRUCTURE
REPUBLIC OF MALDIVES

Ha. Kelaa Harbour Survey

Terms of Reference (ToR)

This ToR is a guide to hire a Surveyor to produce an As-Built of Ha. Kelaa. The ToR highlights the scope of work, requirement of the consultant along with the technical specification, selection criteria, how bids will be evaluated and awarded and finally the payment schedule.

Contents

Background

Ministry of National Planning and Infrastructure requires a topographic survey, bathymetry and an As-built of the blow project.

1. Ha. Kelaa Harbour

This topographic survey will be conducted as a support for planning, engineering constructions and environmental assessments.

Scope of Work

The consultant shall conduct a topographic survey of the constructed harbour and produce a topographic map of the entire area. The consultant will be responsible to perform the following services:

- Collection of exiting ground level or terrain with a grid interval of 5m or less. In case of steep slopes, boulders and pits additional spot levels should be measured in order to draw accurate counter lines.
- Shoreline and vegetation line for a stretch of 50m (fifty) further from Harbour area should be surveyed.
- Profile of revetments, breakwater and groyns if there is any in 5m interval.
- Collecting all existing features including existing structures, utilities, trees with girth more than 0.3m, street lights, road crossings, natural and artificial drains etc for a stretch of 50m (fifty) further from harbour area.
- Produce As-built of Ha. Kelaa Harbour.
- To conduct a bathymetry of the harbour basin and for a stretch of 20m (twenty) further from the harbour area.
- Mapping of all required topographic features at a scale of 1:1000. Units used for this survey should be in meters.

The consultant should conduct surveys as per the internationally best practice methods and must comply with all existing standards, criteria and requirements set by Maldives Land and Survey Authority which will be available from the MLSA's website (www.surveyofmaldives.gov.mv). Any uncertainty regarding collecting features should be clarified by MLSA.

Duration of Work

To be proposed by the consultant.

Technical Specification

Topography

Natural features of the specified area should be done with a horizontal accuracy of less than 1 meter and vertical accuracy variation less than 0.05m.

Artificial features of the specified area should be done with a horizontal accuracy of less than 1 meter and vertical accuracy variation less than 0.05m.

Levels of specified area should be done at 5m grid with a horizontal accuracy of less than 1m and vertical accuracy less than 0.05m. In case of steep slopes, boulders and pits, additional spots levels should be measures in order to draw accurate contour lines.

Survey should be carried out by using one or more of the following methods.

1. Differential GNSS
2. Total Station
3. Auto or Digital level

Bathymetry

Bathymetry of the area of construction defined by the authorities and twenty meters further should be surveyed. Bata should be collected at 5-10 meter grid with a horizontal accuracy of not more than 1 meter and vertical accuracy less than 0.1 meter. In case of steep slopes, boulders and pits, additional spots levels should be measures in order to draw accurate contour lines.

Echo sounder should be used for bathymetric survey. The position should be done by D-GPS or Total station. Where use of echo sounder is found inappropriate like shallow water area ot surf zone, Total station method, lead or leveling staff can e used.

Mapping

The standards of mapping for both topography and bathymetry

Projection: UTM zone 43 north for areas north of the equator and UTM zone 43 south for areas south of the equator.

Spheroid: WGS 84

Datum level for Elevation and Depths: MEAN SEA LEVEL (MSL)

1. All the measurements of intended points should be in Easting Northing and Orthometric height coordinates. The coordinate values (horizontal) of the four corners of the map sheet should be labeled.
2. The scale of mapping is 1:1000. The contour interval should be 0.5 meter.
3. Where available a satellite or aerial image of the area should be inserted to background and aligned to the map (Geo-referenced).
4. The topographic and bathymetric map should be combined and incorporated in the final products (both digital and sheet map)
5. The final map should be created using AutoCAD system.

6. The size of the map sheets should basically be A3. Where A3 is in-appropriate the next larger size should be used.
7. All maps should show all the bench/station marks and where applicable permanent stations with all details,
8. All distances should be in metric unit system and all angles should be in degree minutes seconds.

Control Point of the Survey

The STATION MARKS installed for the in-survey of the project should be used as controls point of out-survey. Condition of these control marks should be verified before occupying the station. These stations should be properly recorded according to the specification laid by the Ministry of National Planning and Infrastructure.

Deliverables

Final Report

The report should explain the methods of survey, survey equipment and devices, the dates of surveys, details of the control points, condition of the site, information about the surveyors and people involved in the survey from community side.

Map Sheets

Topographic and bathymetric maps printed at 1:1000 scale on A3 or larger sheets.

Digital Copy

- All field notes, sketches digitized to PDF format.
- All reports in PDF format.
- All raw and processed data in ASCII and PDF format.
- All drawings in AutoCAD and PDF format.

As-Built

The party should submit a complete as-built of the Harbour. Points for as built should be taken in every 5m interval. However more points are required for curvatures.

Health and Safety

The survey team shall use safety equipment such as appropriate clothing and procedures to personal to undertake the work safe and safety for others.

Evaluation Criteria

Company profile

Each bid should have a company/Individuals profile including the following

- GST registration certificate if applicable
- Company registration certificate / National ID card if an Individual
- Works undertaken in the past 10years along with work completion/reference letters from clients
- CV of tem leader (along with survey registration certificate from Ministry of National Planning and Infrastructure) and survey personnel.

Manpower

Should have a survey team with minimum 4 (Four) people. A team leader and three persons for the field work. Team leader must be a registered surveyor in Ministry of National Planning and Infrastructure.

Team Leader

Should have a degree in Surveying accredited by the Maldives Qualification Authority (MQA). Geomatic or Spatial Sciences Degrees will be accepted if more than half of the total number of modules of the course is considered as surveying modules.

- Should be registered as a surveying practitioner at Ministry of National Planning and Infrastructure.
- Minimum 5 year experience in surveying works both in field and office works.
- Must be able to visit job site on demand.
- Should have excellent interpersonal skills.
- Demonstrate ability to work in a team environment, projects and/or related consultancy service to the Government of Maldives or other organizations.

Assistant Surveyor

- A/Level (English, Mathematics and Physics) with 1 year work experience under the supervision of a registered surveyor or;
- O/Level (English, Mathematics) with 2 years' work experience under the supervision of a registered surveyor and;
- Fair understanding of surveying technology and AutoCAD programs.
- Must be able to work on the field for the extent of the field works of the project.

Equipment

The proposal must state the brand and the model numbers of the equipment to be used for the survey and must be calibrated. The calibration certificates to be included in the proposal.

Evaluation

Bid will be evaluated separately. Scoring for each party will be based on the following factors.

Equipment and personal will also be evaluated to check whether they meet the requirements if not they will be disqualified.

1. Cost
2. Time
3. Experience in similar works

Cost = C

C = Lowest Cost / Proposal Cost

Time = T

T = Shortest Time / Proposal Time

Experience = E

For experience points will be given according to the below table

No of specific experience	Points
>= 5	3
3 to 4	2
2	1
Less than 2	0

SCORE = 2C + T + E

Selection

The contract will be awarded to the highest scoring party. For any reasons the contract has to be terminated before commencing, Ministry will not go for a second bidding process. The contract will be awarded to the next highest scoring party.

Payment Schedule

The Consultancy is being funded by the Government of the Maldives. Payments will be released in accordance with the following deliverables:

- 15% On signing the Contract
- 30% On submission of topographic survey report, maps and drawings
- 30% On submission of as-built survey report, maps and drawings
- 25% On final approval of survey maps, drawings and reports

The currency of payment is Maldivian Rufiyaa (MVR)

Any delays in failing to meet the deadlines provided by the surveyor's duration will result in Liquidated Damages (LD). LD will be applied at 0.5% of bidder's price per day for a maximum of 10% of the bidder's price.