

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



MINISTRY OF TOURISM, ARTS AND CULTURE  
REPUBLIC OF MALDIVES

C I R C U L A R

**Reference Number:** 88-DS/CIR/2012/34  
**Date:** 2<sup>nd</sup> July 2012  
**To:** Tourist Resort Islands/Picnic Islands/Marinas/New Developments  
**Subject:** Time extension for the re-registration of land areas of tourist establishments

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If transmission is not clear or incomplete, please inform us at Tel no: 332 3224

Dear Sir/ Madam

Reference is made to our circular no: 88-DS/CIR/2011/15 dated 22<sup>nd</sup> December 2011 with regard to the Surveying and re-registration of land areas of tourist establishments.

We take this opportunity to inform you that the deadline for surveying and land re-registration is extended till 31<sup>st</sup> December 2012.

Anticipating, your full cooperation and support on the above.

Thank you.

Mohamed Adhly

Assistant Director

*\*This is a computer generated Circular*

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Ministry of Tourism, Arts and Culture, Velaanaage, 5<sup>th</sup> Floor, Ameer Ahmed Magu, Male', Maldives  
Tel: +(960)332 3224, +(960)332 3226, +(960)332 1216, Fax: +(960)332 2512  
E-mail: info@tourism.gov.mv, website: www.tourism.gov.mv

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MINISTRY OF TOURISM, ARTS AND CULTURE  
REPUBLIC OF MALDIVES

## C I R C U L A R

**Reference Number:** 88-DS/CIR/2011/15  
**Date:** 22<sup>nd</sup> December 2011  
**To:** Tourist Resort Islands/ Hotels/Guest Houses/ Picnic Islands/ Marinas  
**Subject:** Survey and Re-registration of land areas of tourist establishments

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If transmission is not clear or incomplete, please inform us at Tel no: 332 3224

Dear Sir/ Madam

Reference is made to the Tourism regulation No: 2010/R-20 dated 30<sup>th</sup> December 2010 with regarding rent calculation for tourist establishment based on the land area of the facility.

With Reference to clause 4 of the referred regulation, land areas of the tourist establishments require to be surveyed in order to verify the existing registered land area of all tourist facilities. Please find herewith the Land area survey guideline prepared for the purpose.

Hence, you are kindly requested to conduct the surveys and submit the documentation in accordance with the provided guideline for verification and reregister the land areas. We request that the survey be completed and the documents be submitted before 30<sup>th</sup> June 2012.

For further information please do not hesitate to contact us.

Anticipating your full cooperation and support on the above.

Thank you

Mohamed Adhly

Assistant Director

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Tel: +(960)332 3224, +(960)332 3226, +(960)332 1216, Fax: +(960)332 2512  
E-mail: info@tourism.gov.mv, website: www.tourism.gov.mv

# Surveying and Land Registration Standards for Tourist Properties of the Maldives

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Technical Brief

2011

**Abbreviations**

PSM – Permanent Station Mark

MSL- Mean Sea Level

DWG - Autocad data format

UTM- Universal Transverse Mercator

DTM- Digital Terrain Model

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## **1 Introduction**

The new land rent regulation implemented by the MoTAC requires the land area of all tourist properties to be registered at MoTAC by 31<sup>st</sup> December 2011. For the existing properties, the land area of the property would be determined from an as built drawing of the development. For the new development, the land area would be surveyed and registered before the concept for the development is approved.

## **2 Objectives and Purpose of the survey**

Due to the change in Tourism Act and regulations of the Maldives, it had become very important to provide reliable land information for fiscal purposes. According to the new regulation the rent of the tourist property is based on its land area. Defining the land area of the dynamic shoreline in terms of surveying and cadastral is challenge.

In order to full the requirements of the fiscal purpose and minimise errors, minimum survey standards need to be adopt to maintain high quality and reliable survey information. The survey standards in the documents are developed to fulfil multiple applications of the developer and government authorities. Some of these applications include:

- Shoreline survey
- Control survey
- Monitoring and deformation

During the development of these standards, it was very clear that verification and checking mechanisms needs to be in-place to prevent conflicts arising and also a framework that will eventually support to resolve these matters.

## **3 Summary of Requirements**

The Registered Surveyor shall:

- Establish Primary Control Network for the island.
- Supply Survey data in three dimensional Autocad DWG format, Digital Terrain Models (DTM) and ASCII file contain all points.
- Land Survey Report (for land registration purpose)
- Survey Technical Report

The Registered Surveyors shall implement quality management procedures to ensure that the data conforms to specification. This shall include thorough checking of quality of deliverables products prior to delivery.

## 4 Topographic Mapping

### 4.1 Scale

The Registered Surveyor shall map all topographic features at a scale of 1:1000 (plotting accuracy as **1mm**). The position of all features shall be surveyed in 3D (Easting, Northing, and Height)

### 4.2 Accuracy

The relative accuracy of permanent structures shall not exceed **10-15 mm**.

Vegetation line accuracy 0.5m

High tide line accuracy 0.25m

Low tide line accuracy 0.25m

Permanent Station Mark accuracy 0.01m

### 4.3 Features to be Map

The registered surveyor shall survey the following features:

*The limits of the island or plot of land:* The High tide line, Mean tide line, Low tide line shall be surveyed with an accuracy of 0.25m. . All data shall be represented as a closed polygon.

*Environmental features:* enclosed water bodies such as mangroves, swamps within the area shall be mapped and presented as a closed polygon.

*Limits of vegetation:* The extent of the vegetation periphery with an accuracy of should be 0.5m. All data shall be represented as a closed polygon.

## 5 Grid and Height Datum

The Survey shall be related to:

**Projection:** Universal Transverse Mercator (UTM), Zone 43, North/South Hemisphere

**Ellipsoid:** WGS 84

**Vertical Datum:** Local Mean Sea level (MSL) local height shall be derived from predicted tide provided by Department of Meteorology.

### 5.1 Control

The Registered Surveyor shall follow APPENDIX 2 before any Permanent Station Mark (PSM) are established.

The PSM's marker shall be established on location where there is good view of the sky and on stable soil. Please refer to APPENDIX 2 guide.

The Registered Surveyor shall position all PSM using high-precision Static GNSS surveying method. All PSMs shall be position relative to the datum point in WGS84 with sufficient accuracy to meet accuracy specification.

.

The WGS 84 coordinates for PSMs shall be projected into UTM zone 43N/S co-ordinates.

The Registered Surveyor shall provide detail station description and photographic evidence of the PGM's established on the island. The Survey Control Station description shall be submitted in the format provided the



APPENDIX 2 refer to control diagram provided.

## 5.2 Accuracy

The precision of the datum point shall be better than  $\pm 0.100$  m in WGS84, and the relative accuracy shall be better than 10 mm + 4 mm per km

## 6 Land Survey Report (for land registration purpose)

A Registered Surveyor shall supply a land survey report for the purpose of land registration for under the Maldives Tourism Act. The report shall be provide with the following information

- Grid Information
- Survey date and time
- Administrative information: Province, atoll , island name
- Name of the surveyor, surveyor registration number and declaration
- Mean tide line Area in sqm
- Site map showing
  - High tide line
  - Mean tide line
  - Low tide line
  - Vegetation line
  - Measured grid
  - North Arrow
  - Scale

## 7 Digital Data

The Registered Surveyor shall supply survey data and information in three dimensional Autocad DWG format.

All data collected and final deliverables shall be supplied on two DVD discs clearly labelled as LAND REGISTRATION RAW DATA, RESORT/PLOT NAME, SURVEYED DATE.

## 8 Health and Safety

The registered surveyor shall use safety equipment such as safety shoes, reflective vests and procedures to personal to undertake the work safe and safety for others. The Client shall provide first aid facilities for technical contractor.

## 9 Management

The Registered Surveyor shall adopt appropriate quality management procedures to ensure that the information and material produced and supplied shall comply with the specifications and fitness for the purpose in the quality, completeness, standard of presentation and timely delivery.

The results of any analyses, tests and audits carried out shall be supplied as part of the technical report.

Also included in the part of the technical report shall be co-ordinates of PGM's, and station descriptions.

## **10 Deliverables**

The Registered Surveyor shall supply following information, data and deliverables after undertaking the survey.

1. Data and Information
  - a. Co-ordinates for PSM's in WGS 84 Geodetic Coordinates, UTM Zone 43North/South Coordinates and Local Site Coordinates
  - b. 3 copy of A1 size plot of final maps and DTM models
  - c. A DVD containing three dimensional Autocad DWG format, Digital Terrain Models (DTM) and ASCII file contain all points
2. Reports
  - a. Survey Technical Report according to the structure shown on APPENDIX 1 (hard copy and pdf on a DVD)
  - b. Land Survey Report

## **11 Appendix**

APPENDIX 1: Structure of the Technical Report

|

APPENDIX 2:

**Error! Reference source not found.**

**APPENDIX 1: Structure of the Technical Report**

1. Cover Page
  - Project Name:
  - Contract Number:
  - Project Manager: (Signature)
  - Registered Surveyor: (Signature) (registration number)
  - Date prepared:
2. General Information
3. Methodology
  - a. Methodology adopted for the survey
  - b. List of equipments used for the survey
4. Horizontal Control
  - a. Pre network design and analysis
  - b. Final Coordinates (WGS 84, UTM and local site coordinates)
  - c. Control network diagram
5. Vertical Control
6. Shoreline survey
7. Processing and final data
8. Appendix
  - a. Final Surveyed Map
  - b. DTM visualization
  - c. Station description of all PGM
  - d. Daily Site Logs

**APPENDIX 2: Survey Control Station**

**APPENDIX 3: Locality Diagram**

# Permanent Survey Control Stations.

(as of November 2011 )

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**Maldives Land and Survey Authority (MLSA),**  
Ministry of Housing and Environment.

Control Stations which are used as origin, intermediate check, and closure points such as but not limited to, inter-visible station pairs and/or RTK base station points are recommended to be permanent in nature. Examples include and are not limited to, poured-in-place concrete monuments with uniquely stamped disks, feno rods with disks, steel rods with caps uniquely identifiable, and drill holes in solid foundations.

## *General Rules for Control Stations*

- Locality Diagram of the control station must be either sketched close-to-scale with recovery ties and should contain descriptions in a text format to fully identify the station.
- For all the Control Stations except where position is irrelevant a Visibility Obstruction Diagram should be prepared.
- The Control Stations should be named and labeled according to the guide lines set by MLSA.

## Naming of the station marks.

The name and other details of PSM should be engraved on a stainless steel plate as below and fixed on the monument. If monument is completely buried the name plate can be fixed to a near by long lasting object such as a wall.

Example:



Please contact Maldives Land and Survey Authority for further information for the numbering sequence.

### *Permanent Station Mark (PSM)*

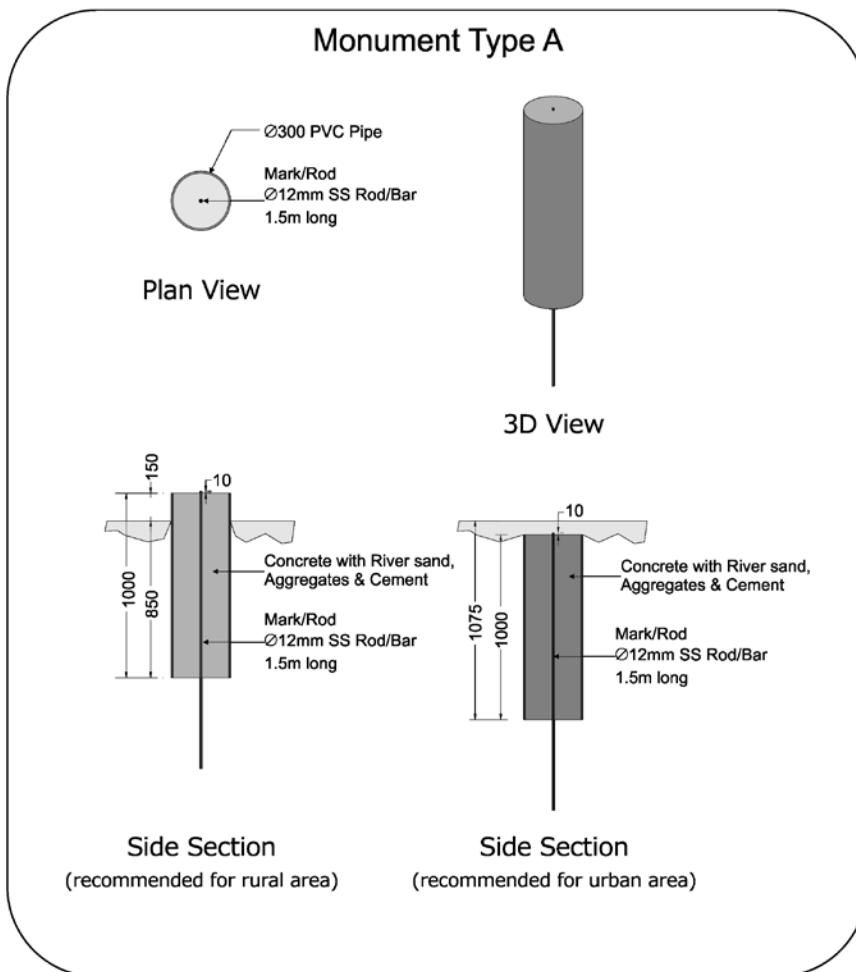
Permanent Station Mark (PSM) is the main control station for all the surveys of every island. Three (3) PSM are to be established in each island. **Approval from the Maldives Land and Survey Authority should be obtained before establishing a PSM.** The names of PSMs will be issued from Maldives Land and Survey Authority.

The horizontal coordinates (X, Y) of the first PSM of any island should be determined if possible relative to the Male' IGS Station. If relative positioning is not possible single point localization should be done for more than six hours with a GNSS receiver.

- The vertical coordinate (Z) of the first PSM of any island should be related to the mean sea level which should be determined after an analysis of local tide.
- All successive PSMs of any island should be related to PSM01 of that island.
- All monuments of PSM shall be constructed to the *Monument Type A* specification.
- If the use of an existing structure or a solid rock is more suitable, both in stability and location wise, construction of a Type A monument is not necessary.

### Monument Type A.

- The mark / stainless steel rod should be placed in the top of a concrete block cast in-site having a volume of at least 0.07 cubic meter and shaped as shown below.
- In urban areas it is recommended to bury the whole monument until the top is about 75mm below the surface of the ground.
- In rural areas it is recommended to bury the monument leaving the top 150mm above the surface of the ground.
- A stainless steel bar with a diameter between of 12mm should be inserted from the top of the concrete as the mark.
- One CM of the rod should be left above the top surface of the concrete in order to place the leveling staff.
- This bar/rod should be lengthy enough to reach the hard ground.
- Any two PSM should be inter visible.



Materials required for per Monument.

| Item      | Bags |
|-----------|------|
| Cement    | 1    |
| Sand      | 2    |
| Aggregate | 3    |



**SURVEY UNIT,****MINISTRY OF HOUSING AND ENVIRONMENT**

Ameenee Magu, Maafannu, Male', 20392, Maldives.

Office (PABX): +(960) 3004300, Fax: +(960) 3004301

Email: survey@mhe.gov.mv

Web: www.mhe.gov.mv



| <b>CONTROL POINT DETAILS</b>  | <b>Station Number</b> |
|-------------------------------|-----------------------|
| <b>Coordinate Information</b> |                       |
| <b>Geodetic</b>               | <b>Grid</b>           |
| <b>WGS 84</b>                 | <b>UTM Zone 43</b>    |
| Lat:                          | E:                    |
| Long:                         | N:                    |
| Ellp Height:                  | Orth Height:          |

|              |
|--------------|
| <b>Date:</b> |
|--------------|

*Monument description & method of survey:*

*General site condition & access:*

*Owner:*

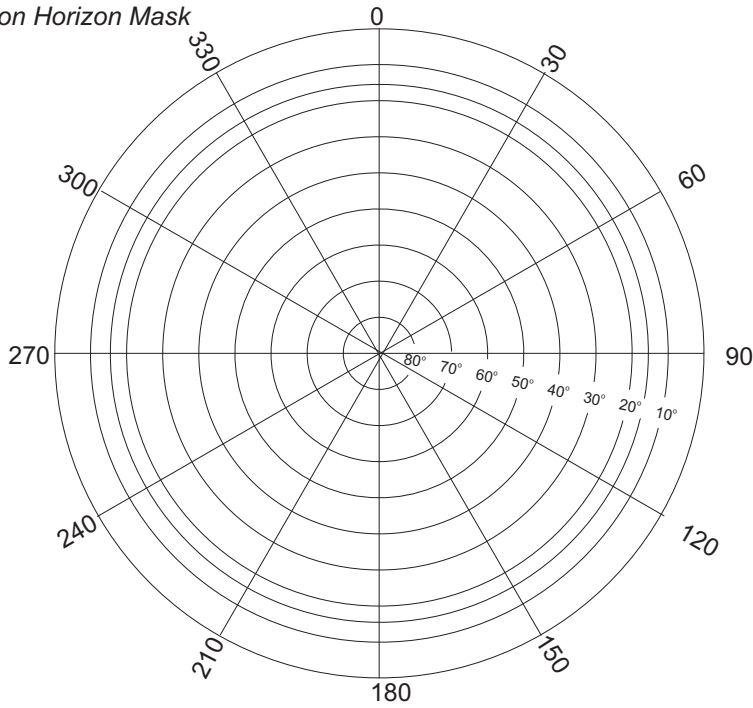
|  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |

**SITE INFORMATION**

Station Number

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|

Station Horizon Mask



Locality

Height above Marker that horizon was mapped from \_\_\_\_\_ m

Magnetic Declination .....  
Declination applied to this figure?  
 Yes  No



Sketched by:

Scale: Not to scale

Date: