



***REGULATION OF GEOMATIC
(WORK INSTRUCTION)***

PART I – PRELIMINARY

***SURVEY DEPARTMENT
MINISTRY OF DEVELOPMENT
BRUNEI DARUSSALAM***

CONTENTS

PART I – PRELIMINARY 3

- 1. Commencement..... 3
- 2. Purpose..... 3
- 3. Interpretation..... 3
- 4. Qualified Persons 4
- 5. Best Practise 5
- 6. Duties of a Surveyor..... 5
- 7. Projection. 6
- 8. Reference Number Of JUA Files 7
- 9. Revisions..... 8

PART I – PRELIMINARY

1. COMMENCEMENT

These Work Instructions are effective from 01 April 2015.

2. PURPOSE

The Survey Department hereby makes the following Geomatics Instructions for all surveyors / geomaticians/ licensed land surveyors. The objective of these instructions is to provide a high level of confidence and security in the survey system. Therefore a surveyor / geomatician/ licensed land surveyor, when undertaking a survey for a client, must respect the survey system of which the current survey will form part of, and be used by in the future by other surveyors / geomaticians/ licensed land surveyors and relied on by stakeholders.

3. INTERPRETATION.

- 3.2. **Cadastral Survey**; Title Survey as defined under The Licensed Land Surveyors Enactment 1979.
- 3.2. **Geodetic Survey** is a survey of a large land area in which corrections are made for the curvature of the earth's surface.
- 3.3. **Topographic Survey** as survey to identify and map the contours of the ground and existing features on the surface of the earth or slightly above or below the earth's surface (i.e. trees, buildings, streets, walkways, manholes, utility poles, retaining walls, etc.).
- 3.4. **Hydrographic Survey** is the science of measurement and description of features which affect maritime navigation, marine construction, dredging, offshore oil exploration/offshore oil drilling and related activities.
- 3.5. **Strata Survey**; The subdivision of land so as to provide for the creation of units for certification of strata plan as defined under (Land Code (Strata)), 1999, Part II
- 3.6. **G.R.S.O**; Abbreviation for Geocentric Rectified Skew Orthomorphic projection used for mapping in Negara Brunei Darussalam.
- 3.7. **S.P.**; Abbreviation for Survey Paper a document containing instructions issued for Surveys.
- 3.8. **Field Data/Book** ; A document for recording the field observations of a survey, issued by the Surveyor General (JUA).
- 3.9. **Strata Plan**; The document that delineates the units and the common property of a Strata Title. Refer to section 9 of the (Land Code (Strata)) , 1999.

- 3.10. **Accessory Unit**; A unit, whether or not part of a building, garden, garage, car parking space, storage space, swimming pool, laundry, stairway, passage etc. that is designed for use with any principal unit or any such purpose, that is shown on a strata plan as an accessory unit.
- 3.11. **Common Property**; A property that is not within a unit and not for the exclusive use of a unit installed or erected before the certification of the strata plan by the Commissioner and a structure erected by a strata corporation as part of the common property.
- 3.12. **Commissioner**; The Commissioner of Lands, being the officer appointed as the head of the Department of Lands and includes any person for the time being lawfully exercising his or her powers. **Land**; Land includes land of any tenure, any building or parts thereof, the air space above the surface of the land and such of the subsoil as is occupied by any buildings and related structures, but excludes the right to all minerals and mineral products (including oil and gas).
- 3.13. **Licensed Land Surveyor**; Any person whose name has been placed on the Register and to whom a licence to practise has been issued by the Survey Board in accordance with the Licensed Land Surveyors Enactment.
- 3.14. **Principal Unit**; A unit that is designed for separate use or occupation, whether in conjunction with any accessory unit or not, as a place of residence or business or otherwise and that is shown on a strata plan as a Principal Unit.
- 3.15. **Surveyor General (SG)**; The officer appointed as the head of the Survey Department and includes any person for the time being lawfully exercising his or her powers.
- 3.16. **Unit**; A Unit, in relation to any land, means a part of the land consisting of a space of any shape situated on, or above the surface of the land, or below the surface of the land to the extent that any buildings or related structures occupy the subsoil, or partly in one such situation and partly in another or others, all the dimensions of which are limited, and that is designed for separate ownership. Refer to section 9 under (Land Code (Strata)), 1999.

4. QUALIFIED PERSONS

All Work covered by these Instructions shall be carried out personally or under the direct supervision of a Licensed Land Surveyor.

5. BEST PRACTISE

Best Practise shall include but not be limited to the following.

- 5.1. Use proven and calibrated equipment,
- 5.2. Analyse acceptable error limits for each component of the survey,
- 5.3. Conform with defensible marking, measuring, recording and processing methods,
- 5.4. Confirm the origin of the survey,
- 5.5. Work from the whole to part,
- 5.6. Provide proof of a survey by redundant method.

6. DUTIES OF A SURVEYOR

- 6.1. All surveys shall be executed in accordance with the Licensed Land Surveyors Enactment; Brunei revised edition 1984 Chapter 100, Land Code (Strata), 1999 and Geomatic Instructions 2007, and any circular or instruction that may be issued from time to time by the Surveyor General. Any departure from these instructions must be agreed to, in writing, by the Surveyor General before being implemented.
- 6.2. Surveys shall be carried out with such equipment and by such methods as will readily attain the standards of accuracy prescribed by these Instructions; and it shall be the duty of every surveyor at all times to apply such checks and tests to his work as may be necessary to obtain those standards.
- 6.3. Each surveyor shall search for all old survey marks (such as geodetic control marks, boundary marks or other approved marks) necessary to prove the accuracy of his survey, and having found those marks, shall connect his survey to them. Each surveyor shall supply to the Surveyor General all information obtained by him relating to the survey.
- 6.4. Surveyors shall immediately report to the Surveyor General any disturbance or the likelihood of any disturbance to Geodetic Primary Reference Station or Continuously Operating Reference Station or other geodetic survey marks.
- 6.5. Surveyors discovering an apparent error in an existing approved survey which materially effect its accuracy shall submit the Surveyor General with

a full report and all available evidence. No attempt shall be made to rectify the error without detailed instructions from the Surveyor General.

7. PROJECTION.

7.1. GRSO Projection

7.1.1. Transformation Parameters

7.1.1.1. GDBD2009 TO BT48 (Bursa-Wolf 7-Parameter)

Parameter	Value	Standard Deviation
Dx	689.59370 m	± 11.31003 m
Dy	-623.84046 m	± 6.78722 m
Dz	65.93566 m	± 14.40584 m
Rx	-0.02331"	± 0.42256 "
Ry	1.17094"	± 0.27705 "
Rz	-0.80054"	± 0.37907 "
Scale	-5.88536 ppm	± 0.92598 ppm

7.1.1.2. GDBD2009 TO WGS84 (3-Parameter)

Parameter	Value	Standard Deviation
Dx	0.13513 m	± 0.07889 m
Dy	0.12670 m	± 0.07889 m
Dz	0.02497 m	± 0.07889 m

7.1.1.3. WGS84 TO BT48 (Bursa-Wolf 7-Parameter)

Parameter	Value	Standard Deviation
Dx	597.1257 m	-
Dy	-624.202 m	-
Dz	2.1991 m	-
Rx	-1.45741"	-
Ry	-0.84837"	-
Rz	1.79984"	-
Scale	-10.4358ppm	-

7.1.1.4. WGS84 TO BT48 (Molodensky-Badekas 10-Parameter)

Parameter	Value	Standard Deviation
Dx	678.3858 m	-
Dy	-665.3742 m	-
Dz	48.2161 m	-
Rx	1.6737"	-
Ry	1.5209"	-
Rz	2.8054"	-

Scale	6.9925 ppm	-
X _m	-2678448.9066 m	-
Y _m	5762777.7250 m	-
Z _m	543962.5028 m	-

7.1.2. Conversions

7.1.2.1. Area

1 Acre = 4046.85642 m ²	m ² = 0.4046845 Ha
1 m ² = 10.76394785 ft ²	ft ² = 24.71062414 Sq link
1 ft ² = 0.09290272 m ²	m ² = 2.295684 Sq link
1 Sq Link = 0.04046842 m ²	m ² = 0.4356 ft ²
1 Acre = 43,560 ft ²	ft ² = 100,000 Sq link

7.1.2.2. Distance

1 Link = 0.20116765 Metre
1 Chain = 20.116765 Metre
1 Foot = 0.30479947 Metre
1 Metre = 4.9709782 Link
1 Metre = 0.04970978 Chain
1 Metre = 3.28084561 Feet

7.1.2.3. Angle

1 Radian =	57.29577951 Degrees
=	3437.746771 Minutes
=	206264.8063 Seconds

8. REFERENCE NUMBER OF JUA FILES

JUA Files reference number shall consists of:

- 8.1.1. Two digits of year of survey. The reference of the year of the survey done in 2008 is 08.
- 8.1.2. After a slash, three-digit sequential number shall follow it. The first job issue for the particular year shall be numbered by 001.
- 8.1.3. After a slash, it shall be followed by abbreviation of type of survey in Land Development Section, there are:

Topographical	TS
Corridor	CO
Cadastral	CD
Precise Levelling	PL
Ordinary Levelling	OL

Hydrographic	HY
GPS	GS
Miscellaneous	MC
Research work	PY
Etc	...

8.1.4. After a slash, it shall be followed by abbreviation of the district where the survey performs. The abbreviations of the districts are:

Brunei /Muara	BM
Tutong	TU
Belait	KB
Temburong	TE

8.1.5. Example of JUA files reference number:

JUA15/001/TS/BM
JUA15/001/CS/KB

9. REVISIONS

- 1st revision
- 2nd revision
- 3rd revision 2004
- 4th revision 2010
- 5th revision 2015