



## **REGULATIONS OF GEOMATICS**

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

#### **PART V (MAPPING)**

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

(UPDATED)

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## **PART VI – MAPPING**

### **1. GENERAL**

#### **1.1. GIS Mapping Section**

GIS Mapping Section of Survey Department is responsible for providing updated, accurate and quality informations for national development as follows;

- 1.1.1. To produce and facilitate continuous topographic maps at scale 1 :10 000 and 1:50 000 that covers the whole of Brunei Darussalam
- 1.1.2. To facilitate and updated maps of 1 : 1 000 continuously on developed area.
- 1.1.3. To create and manage digital topographical database
- 1.1.4. Updating of topographical maps at medium scale and special projects that uses remote sensing technology
- 1.1.5. To facilitate a systematic house numbering and simpang labelling
- 1.1.6. To create and manage geographical names and road naming database
- 1.1.7. Issuance of mapping products in digital format and hardcopy

#### **1.2. Purpose**

This Instruction provides details of the different data preparation guidelines and procedures the GSM Section Staff must observe for the successful publication of accurate and quality series of maps for the various clients of Survey Department.

## **2. MAP PUBLICATION PROCESS**

The following make up the major components of the map publication process

#### **2.1. Data Source**

The following data sources can be used for map composition and design work:

- 2.1.1. Photogrammetry Unit Access Warehouse (MDB format)
- 2.1.2. Enterprise SDE Geodatabase
- 2.1.3. Under no circumstance will GSM Section Staff make editing work on the said data sources. They are only allowed to change the layer representations but not the geometry nor its attributes

## 2.2. Map Projection

The coordinate system being used for the map layout are the following;

2.2.1. GRSO (GDBD2009)

2.2.2. Rectified Skew Orthomorphic (RSO) Projection.

2.2.3. Netherland East Indies (NEI) Pr Equatorial Zone Projection

2.2.4. WGS84

## 2.3. Lithographic Process

2.3.1. For Geospatial Mapping (GSM) Section Staff, Geomedia Pro is used for querying the data to organize into their respective layer names and categories. Proper categorizing of the spatial information is done using the Filter Attribute Table.

2.3.2. Exporting the .MDB file (Geomedia format) data to the design file (.dgn) in microstation is used after querying and for further cartographic preparation and customization.

2.3.3. Create Grid for Legend A and Legend B in MGE software. (Modular GIS Environment)

2.3.4. Based on the Check List and existing data specifications, there should be 7 output files from the conversion process (7 categories):

<i>Boundary</i>	Bdy
<i>Building</i>	Bld
<i>Transportation</i>	Trn
<i>Hydrography</i>	Hyd
<i>Relief</i>	Rel
<i>Miscellaneous</i>	Mis
<i>Vegetation</i>	Veg

2.3.5. Check list is the Design File Compilation Table (Information Feature Table - IFT) which every table consists of 9 check lists:

<i>Boundary</i>	Bdy
<i>Building</i>	Bld
<i>Transportation</i>	Trn
<i>Hydrography</i>	Hyd
<i>Relief</i>	Rel
<i>Miscellaneous</i>	Mis
<i>Vegetation</i>	Veg
<i>Legend A ( As a Template)</i>	<i>Leg_A ( As a Template)</i>
<i>Legend B ( As a Template)</i>	<i>Leg_B ( As a Template)</i>

2.3.5.1. Every CheckList has 63 Level List.

2.3.5.2. To publish a map, the Cartographers have to convert the vector/CAD files (.dgn) into raster format (.rle) in rasterization software.

2.3.5.3. Lithographic specifications are stored in specification table and path files. Each of the lithographic processes (Collage, Imageplot, and Photolab) requires a specification table file and a corresponding path file. (*Map Publisher software*)

2.3.5.4. The information placed varies for each map product and includes a map title, scale bar,, scale no., sheet no., edition no., GDBD, RSO, NEI coordinates, geographical, legend, adjoining sheets, survey diagram, grid.

2.3.5.5. Before printing, the technician will check the digital map in the viewer of the Map Publisher. Once the map is satisfactory, a check plot shall be generated. The digital map will be checked by the senior officers of the Mapping Section for verification. Should there be corrections, the map plots shall be returned to operators for modification.

2.3.5.6. The sheet normally represents an area as below:

*1:1,000 - 10km X 5km*

*1:10,000 - 5km X 5km*

*1:50,000 - Various sizes*

*1:100,000 - Various sizes*

*1:250,000 – AO size*

### **2.3.6. Sheet Numbering**

2.3.6.1. The numbering of sheets of this series is derived from the 10 km R.S.O. Each grid square is identified by the coordinates of its western and southern grid limits.

2.3.6.2. As an example, a square bounded by 540 000m E grid on the west 510 000 m N grid on the south will be numbered as 55/41. The first two digits, viz 55, in this example are 100 km grid values, one from East coordinate and the other from North coordinate and both in 100 km units.

2.3.6.3. The next two digits, viz 41, define the 10 km grid values, one from east coordinate and other from north coordinate and both in 10 km units.

2.3.6.4. The Edition Number will consist of a serial number and the year in which the map details were last edited. The serial number will be 1 for the first edition, 2 for the second and so on. eg. Edition 1-1985.

2.3.6.5. This sheet is further divided into four quadrants, NE, NW, SE and SW, each quadrant being a square of 5 km and is the area covered by a 1: 10 000 scale sheet. the example sheets numbers are: 55/41 NE, 55/41 NW, 55/41 SE and 55/41 SW.

2.3.6.6. In the above example sheet numbering system of the map scale 1 :10 000

### **2.3.7. Map Accuracy**

2.3.7.1. Well-defined points of detail should have an accuracy better than a root mean square error (r.m.s.e.) of +/- 0.3 mm at Map Scale when compared with precise measurements using ground surveys. 90% of a representative sample of well-defined points shall be within 0.5 mm.

2.3.7.2. The spot heights in open areas should have an accuracy better than an r.m.s.e of +/- 1.25 m when compared with precise ground measurements. 90% of a representative sample of heights shall be within 2.0 m.

### **2.3.8. Map Contents**

2.3.8.1. Maps in this series will be comprehensive topographic editions showing elevations and contours, all natural and cultural features, and sufficient number of suitable annotations.

2.3.8.2. All dimensions will be given in metric values.

2.3.8.3. All information falling outside and inside the neat lines will eventually be in the Malay language using the Roman Script.

- 2.3.8.4. The following colours will be used on these maps for the broad categories;
  - 2.3.8.4.1. Water features – Cyan (process blue)
  - 2.3.8.4.2. Contours, sand, roads - Magenta (red)
  - 2.3.8.4.3. Vegetation – Green (varying combinations of yellow and process blue)
  - 2.3.8.4.4. All other details – Black
- 2.3.8.5. Edge-matching of all details should be carried out between adjoining sheets at both compilation and fair drawing stages.