

Maps are used in Hong Kong for public administration, town planning, housing, land development as well as leisure purposes by the Government, utility companies, developers and the general public. The Survey and Mapping Office (SMO) of the Lands Department is committed to the provision of accurate and up-to-date maps in a wide selection of topics and scales to support the rapid and intensive development of Hong Kong. Guidebooks and thematic maps of special interests are also produced to meet the requirements of different sectors. Today, the production of all series of maps has been computerised in the SMO. Digital maps are proving increasingly important to support daily life. Through the web map services, both the locals and tourists can have convenient access to information on Hong Kong's geography, buildings, roads, natural environment and public facilities.

**1:1 000 Basic Mapping:** Early mapping of urban Hong Kong and Kowloon was at 1:600 scale, and showed no height or contour information. In the early 1950s, the New Territories areas were mapped at a scale of 1:1 200 with the intention to replace the old Demarcation District sheets surveyed in the early 1900s. The mapping evolved as a predominantly planimetric record, eventually supplementing rather than replacing the sheets.

A mapping contract for the whole territory by aerial photography and photogrammetric plotting was commenced in 1962 and completed in 1971. It provided mapping at 1:600 scale, with five-foot contours, covering the then Hong Kong Island, Kowloon and New Kowloon. All but the hilly areas and outlying islands of the New Territories were covered at 1:1 200 scale, with 10-foot contours. Following the adoption of a metrication policy in the early 1970s, the SMO converted some 3 000 sheets to the metric scale of 1:1 000, with metric contours and spot levels. For the previously unmapped hilly areas and remote islands, the SMO embarked on a mapping programme to survey these unmapped areas by photogrammetric method. It was started in 1994 and completed in early 1997. The 1:1 000 basic map sheets covering the entire territory of Hong Kong are available both on paper and in digital form.

**Revision:** Updating of maps is carried out continuously, priority being given to the revision of maps located in the areas of greater activity and rapid development. A survey intelligence system has been set up to collect information on proposed construction projects and building works and to record their anticipated completion dates. With this information, a revision programme is planned to survey the major changes on ground within a short period after their completion.

**Topographic Maps:** While 1:1 000 maps produced by the SMO are essential for planning and land administration, smaller scale topographic maps are also required by government departments and the public for various purposes. Medium and small-scale topographic maps are derived from the large-scale maps by means of cartographic generalisation. Symbolisation and generalisation can enhance legibility of map details in small-scale maps.

The 1:5 000 topographic map series has been produced since mid-1970. It started with the urban districts and then extended to the New Territories. In 1996, the 1:5 000 scale map was converted to digital form.

Since its publication in the 1970s, the 1:20 000 topographic map series (HM20C) has become a popular map series. Printed in colour and with contours depicted at 20m interval, this map series serves many purposes. It is often used by schools in the teaching of map reading and used by the scouts and hikers for hiking and orienteering.

The first bilingual topographic map of Hong Kong published by the SMO is the 1:50 000 map. The 1:50 000 map comprises two sheets printed on both sides with hill shading and layer tinting. A joined version in one single sheet ideal for use as a wall map is also available.

The bilingual 1:100 000 scale map series showing Hong Kong on one sheet features elevation tints and hill shading. Another single sheet map at 1:200 000 scale which shows more generalised views of the topography of the territory is also available.

Hong Kong 1980 (HK1980) Grid coordinates based on the Hong Kong 1980 Geodetic Datum are shown on most topographic maps. On 1:20 000 maps and other maps of smaller scale, the geodetic coordinates (latitude and longitude) and the Universal Transverse Mercator (UTM) Grid coordinates based on the World Geodetic System 1984 (WGS84) are also shown. A booklet "Explanatory Notes on Geodetic Datums in Hong Kong" published by the SMO describes the map projection formulae and datum conversion parameters. It can be downloaded free of charge from the SMO Geodetic Survey webpage at <http://www.geodetic.gov.hk/smo/gsi/programs/en/grid.htm>.

Map users can use the information in the booklet to convert the positional reference of a point from one datum to another. In addition, the web-based transformation tools in the website can provide instant conversion between different geodetic datums.

**Special Maps:** Since its first publication in 1988, the *Hong Kong Guide* has continued to be one of the best sellers among various Map Products. The *Hong Kong Guide*, about the size of A4, is published at the beginning of each year.

This guidebook contains a wealth of information that most users will find useful.

The *eHongKongGuide*, an electronic version of the *Hong Kong Guide*, was also published in early 2017 for free download. Apart from PDF readers, these electronic maps can be read via different applications on desktop computers and mobile devices in an offline mode. By using free web tools, users can search coordinates, text and information, track positions using a GPS device and add personalised images and geographic information.

After the map of the popular countryside series was first published in 1971, the demand for this type of maps has been great and steady. There are five sheets in this series, each showing detailed information of leisure amenities and footpaths. Besides, to make the maps more durable for outdoor activities, this series of maps is printed on waterproof paper.

A series of street maps at 1:10 000 scale (SM10C) covering the whole of Hong Kong has been made available since 1998. To date, 59 sheets are available.

The 1:50 000 Helicopter Flying Chart (2 sheets) and 1:100 000 Local Flying Chart are produced to show the flight areas in Hong Kong. Relevant aeronautical information is overprinted in red and blue on topographic base maps.

The SMO also produces other smaller page-sized maps to show thematic topics in publications such as *the Hong Kong Yearbook* and these maps are also available to the public.

**Satellite Image Maps:** A series of satellite image maps of various scales showing the Hong Kong and nearby regions are also available. Place names are added to the image to help identify locations.

**Orthophoto Maps:** A series of Orthophoto Maps OPM50 and OPM100, of scale 1:50 000 and 1:100 000 being available in both paper print and digital formats are published covering the whole territory of Hong Kong. The Orthophoto Maps are produced from aerial photographs using digital photogrammetric technology for data processing, orthorectification and mosaicking. The general public can obtain and use the digital version of the 1:100 000 orthophoto map free of charge.

**Geological Maps:** The SMO has produced for the Geotechnical Engineering Office (GEO) of Civil Engineering and Development Department the HGM20 series of geological maps comprising 15 sheets at scale 1:20 000. It depicts solid and superficial geology of Hong Kong. Another 1:20 000 series on solid geology, HGM20S, consists of a sheet of the San Tin area. GEO has also produced three sets of geological survey plans of series HGP5, HGP5A and HGP5B showing solid and superficial geology in selective areas including Yuen Long, Sha Tin and Chek Lap Kok, etc. On the geological maps, the map base is provided by the SMO and the geological data by the GEO.

**Digital Maps:** The SMO supplies Topographic Maps, Orthophotos, Aerial Photographs, Land Boundary Maps,

Geo-reference Database, GeoCommunity Database and 3D Spatial Data in digital form. Many utility companies, engineering consultants, IT consultants and education institutes including government departments have established their own automated mapping, facilities management, customer support and geographic information systems using the digital maps provided by the SMO as common reference.

The 1963 Orthophoto, which is a high resolution orthophoto compiled from aerial photographs taken in early 1963 covering most Demarcation Districts (DD) in the New Territories, was launched in 2013. The 1963 Orthophoto can be used for various applications requiring identification of old ground features.

The i-Series Digital Maps, including iB1000, iB5000, iB10000 and iB20000 Digital Topographic Map, iC1000 Digital Land Boundary Map and iG1000 Geo-reference Database, provide more comprehensive datasets in new data formats and enable users to select the seamless version covering users' defined area-of-interest so that they do not need to combine discrete tiles of digital maps into one single file for their work. They replace the old and obsolete data formats, including E00, which was ceased to be available in late 2016.

The new UE version Digital Aerial Photos are captured by the large format digital aerial camera commissioned in mid-2016. With dynamic range of colour information higher than 12-bit, each shot of photographing captures five spectral bands information and produces a total of 3 products suitable for photogrammetric measurement.

**Public Sector Information:** To promote the use of geographic information, SMO has made available some open maps and open data for free commercial and non-commercial uses through the SMO website (<http://www.landsd.gov.hk/mapping/en/download/psi/index.htm>) and public sector information portal (<http://data.gov.hk>).

**Web Maps:** A common geospatial information platform, the **GeoInfo Map**, has been developed and implemented by the SMO. Geospatial data from different sources are integrated into this platform for convenient access by the public through the Internet. It offers a powerful geographic search engine, detailed maps and many useful map tools. It also supports the GovHK portal and government departments' websites. GeoInfo Map can be accessed at <http://www.map.gov.hk> or via the map buttons in certain departments' webpages. To respond to the expectation and needs of the general public to access to official map and location information of public facilities while on the go, the SMO developed and launched its first mobile map app service for iOS and Android platforms called the **MyMapHK** in June 2014. MyMapHK is an all-in-one map app with six themes - Map, Hiking, Old Hong Kong, Election, Emergency and Offline Map. It provides up-to-date, detailed bilingual base map of Hong Kong and integrates more than 120 types of data related to public facilities. Users can visit the MyMapHK website (<http://www.landsd.gov.hk/mapping/en/MyMapHK/>) for details and free download. The SMO further launched a free

digital inclusion mobile map application, "VoiceMapHK", in March 2016. The app makes use of the "Voice-over feature" of smartphones, facilitating the visually impaired users to retrieve location information conveniently. The location information provided by the App will be supplemented with orientation and distance information, which further helps the visually impaired users to understand the surrounding environment. It operates on iOS operating system. Please visit

<http://www.landsd.gov.hk/mapping/en/VoiceMapHK/index.htm> for details.

**Map Sales and Archives: The Hong Kong Map Service (HKMS)** (<http://www.hkmapservice.gov.hk>) was set up to facilitate the searching, e-ordering and e-payment of digital Map Products (including maps and aerial photographs) in late 2010 and paper Map Products in mid-2014. Through HKMS, members of the public can complete Map Product selection, ordering, payment as well as collection online for digital Map Products, and collection by post or at any of our 12 sales outlets for paper Map Products.

The paper Map Products can be obtained and ordered from the Map Publications Centre (HK) on 23rd Floor, North Point Government Offices, 333 Java Road, North Point, Hong Kong (tel. 2231 3187); the Map Publications Centre (Kln.) at 382 Nathan Road, Yau Ma Tei, Kowloon (tel. 2780 0981); and all District Survey Offices (except District Survey Office/Kowloon). Popular items are also available at designated Post Offices and some bookshops. Old editions of maps and historical maps are available at the Map Publications Centre (HK).

For purchase of digital Map Products, apart from ordering online through HKMS, users may download free sample digital maps from Lands Department's website ([http://www.landsd.gov.hk/mapping/en/digital\\_map/sampledata.htm](http://www.landsd.gov.hk/mapping/en/digital_map/sampledata.htm)) for testing. A non-exclusive and non-transferable licence will be issued to the customer after purchasing the digital map. It permits the licensee to use the digital map under specific terms and conditions.

**Enquiry:** Enquiries on map products of the SMO can be made at 2231 3187, or through e-mail at: [smosale1@landsd.gov.hk](mailto:smosale1@landsd.gov.hk). For more information, please visit <http://www.landsd.gov.hk/mapping/en/pro&ser/products.htm>.