

Mapping and Geospatial Data



Maps are used for public administration, town planning, housing, land management and development, as well as leisure purposes by the Government, private sectors and the general public. The Survey and Mapping Office (SMO) of the Lands Department (LandsD) is the survey, mapping and geospatial data agency of the Government. It is committed to the provision of accurate and up-to-date map and geospatial data to support the rapid development of Hong Kong. The SMO is developing a full-fledged 3D Digital Map and providing technical support for the development and implementation of the Common Spatial Data Infrastructure (CSDI) so as to help developing Hong Kong as a Smart City.

HONG KONG GEODETIC DATUM: The Hong Kong 1980 (HK1980) Grid coordinates based on the Hong Kong 1980 Geodetic Datum are shown on most topographic maps. Geodetic coordinates (latitude and longitude) and the Universal Transverse Mercator (UTM) Grid coordinates based on the World Geodetic System 1984 (WGS84) are also shown on other small scale topographic maps. 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 (https://www.geodetic.gov.hk/en/gi/grid_index.htm). In addition, the web-based transformation tools on the website (<https://www.geodetic.gov.hk/en/gi/transformation.htm>) and the coordinates transformation API via the Public Sector Information Portal (<https://data.gov.hk/en/>) can provide instant conversion among different geodetic datums.

EARLY TOPOGRAPHIC MAPPING: Early mapping of urban areas in 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 produced in the early 1900s. These maps evolved into a predominant planimetric record, eventually supplementing rather than replacing the Demarcation District sheets.

A mapping contract for the whole territory by aerial photography and photogrammetric plotting commenced in 1962 and was completed in 1971. It provided maps 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 also mapped at 1:1 200 scale, with 10-foot contours.

Following the adoption of the metrication policy in the early 1970s, the SMO converted the topographic maps of about

3 000 sheets to metric scale of 1:1 000, with metric contours and spot levels. From 1994 to early 1997, SMO embarked on a mapping programme to survey those previously unmapped hilly areas and remote islands by photogrammetric method.

SMO MAP PRODUCTS: The SMO produced various types of map products in both digital and paper forms. These map products are widely used by government departments and the public for various purposes. The 1:1 000 topographic map covering the entire territory of Hong Kong is the most popular map. It is always used in city planning, land administration and construction. Based on the 1:1000 topographic map, other medium to small scale topographic maps, such as 1:5 000, 1:20 000, 1:50 000 and 1:200 000 are also produced by means of cartographic generalisation and symbolisation. Digital form of the above topographic maps has become open data and the public can use them for both commercial and non-commercial purposes.

Apart from topographic maps, the SMO also produces various Special Maps such as e-Hong Kong Guide, Countryside Series for hiking, Satellite Image Map, and Orthophoto Map. There are also other Special Maps prepared with information from other government departments, such as Geological Map depicting both the solid and superficial geology of Hong Kong, and the 1:5 000 Airport Height Restriction Plan, 1:50 000 Helicopter Flying Chart and the 1:100 000 Local Flying Chart showing civil aviation information.

For more information of the SMO map products, please visit <https://www.landsd.gov.hk/en/survey-mapping/mapping.html>

SALES AND DISSEMINATION OF MAP PRODUCTS: The online platform **Hong Kong Map Service 2.0 (HKMS 2.0)** (<https://www.hkmapservice.gov.hk/>) provides functions of searching and ordering of different types of map products, including digital Cadastral Survey Records and map products other than those mentioned above.

In addition to HKMS 2.0, the SMO Map Sales Outlet (<https://www.landsd.gov.hk/en/about-us/sales-outlets.html>) is another channel for ordering the SMO map products. The flagship, Map Publications Centre (Hong Kong), also serves as the Map and Aerial Photograph Library for the public to inspect and purchase historical maps and aerial photographs.

3D DIGITAL MAPS: 3D Digital Maps enhance understanding of multi-level spaces of a modern city and support applications such as 3D spatial analysis, visualisation and works project design presentation in different developments. The SMO

strives to develop both the full-fledged 3D Digital Map, which is one of the building blocks of the CSDI for opening and sharing of government geospatial data, and the 3D Indoor Map of about 1 250 buildings by the end of 2023. Meanwhile, the public may preview and download other 3D map products, including the 3D Spatial Data, the 3D Visualisation Map and the 3D pedestrian network, at the **Hong Kong GeoData Store** (<https://geodata.gov.hk>) and the Public Sector Information Portal (<https://data.gov.hk>).

GEOSPATIAL DATA: The SMO provides various types of geospatial data, such as digital topographic and land boundary maps, aerial photographs, Geo-reference Database and GeoCommunity Database. Many utility companies, engineering consultants, IT practitioners, education institutes and government departments have been using those geospatial data in their business activities. The SMO has made most of the geospatial data available for free commercial and non-commercial uses. The availability of open geospatial data facilitates the development of a digital economy, realising the visions of the Smart City Blueprint for Hong Kong 2.0 and bringing benefits to the whole society.

Open digital map products are available at HKMS 2.0. More open geospatial data can be downloaded from the LandsD's website (<https://www.landsd.gov.hk/en/spatial-data/open-data.html>) and the Public Sector Information Portal (<https://data.gov.hk/en/>).

GEOSPATIAL PORTALS AND SERVICES: In view of the rising geospatial awareness and increasing public needs for open spatial data, the LandsD has developed and launched different geospatial portals and services.

GeoInfo Map, a common geospatial information platform with integrated geospatial data from different sources for convenient access by the public through the Internet. It can be accessed at (<https://www.map.gov.hk>).

MyMapHK is the first SMO mobile map app for iOS and Android platforms. It 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 bilingual base maps of Hong Kong and integrates more than 300 types of data related to public facilities.

VoiceMapHK is a free digital inclusion mobile map application making use of the "Voice-over feature" of smartphones to facilitate the convenient retrieval of geographic information by the visually impaired users.

The LandsD has developed and launched the **Hong Kong GeoData Store** (<https://geodata.gov.hk>), the alpha version of CSDI Portal, to facilitate the sharing of geospatial data and to support various Smart City initiatives and applications through innovative use of geospatial data and information technology.

Users may explore and download from the portal over 300 types of geospatial datasets in different themes provided by various government departments. The datasets are available in open and machine-readable formats. The portal also provides **Map Application Programming Interface (Map API)** services, which allows map users or developers to directly use the latest maps and geospatial data in their applications. This reduces the time and cost in using geospatial data and encourages the development of more innovative map applications to support the development of Smart City.

The **District-based Spatial Information Dashboard** is a web-based application with simple interactive data visualisation tools for presenting the district-based analytics that are of interest to the public on a single screen.

The **Geo-tagging Tool** is also a convenient web-based tool enabling the public, who do not have advanced technical skills in operating a geographic information system, to make their own geospatial data by correlating their data with positional information.

For more information about the geospatial portals and services, please visit (<https://www.landsd.gov.hk/en/spatial-data/geospatial-information-services/geospatial-portals.html>).

ENQUIRY: Enquiries about the map products and services provided by the SMO can be made at 2231 3187, or through e-mail at: smohq@landsd.gov.hk. For more information, please visit the LandsD's website (<http://www.landsd.gov.hk>).