

Download Spatial Data and Convert them into a Required Format for GIS Applications

地理空間實驗室
Geospatial Lab



空間數據共享平台
Common Spatial
Data Infrastructure

地理空間實驗室
Geospatial Lab

Source of Spatial data

- **Data from Hong Kong *Geodata Store*, HKSAR Government**
<https://geodata.gov.hk/gs/>
 - Free download of spatial data such as topographic maps 1:1000, 1:10000, 1:20000, Aerial Photo (DOP5000 and DOP1000 and 3D spatial data)
- **Data from Open Data, HKSAR Government** <https://data.gov.hk/tc/>
 - Data about CoVID-19 and IRNP data (road Network data) can be downloaded here.
- **OpenStreetmap** <https://www.openstreetmap.org/>
 - OpenStreetMap is built by the community and it's free for anyone to fix, update, download and use.
- **Open Geo-Spatial Data in HK** <https://opendata.esrichina.hk/>
 - Esri China (Hong Kong) Limited utilized data from DATA.GOV.HK and created different types of layers and webmaps to enrich users' GIS applications.

Guidance in this Manual

- This document instructs you how to download spatial data from different open sources, mainly the [*Geodata Store*](#).
- The downloaded data can be of various formats. The most common one are:
 - Geojson (.geojson)
 - Shapefiles(.shp)
 - GML (.gml)
 - Excel (.xlsx)
 - Comma Separated Value (.csv)
 - KML(.kml)
 - Feature Geodatabase (FGDB)
- All these data formats can be displayed and processed by a free GIS software called *QGIS*
- However, if your data are transferred to *ArcGIS Online and desktop* for further processing, then the data format allowable for these applications are Geojson, KML, Shapefile(zipped), Excel and CSV and FGDB.

GeoJSON / KML

Download GeoJSON / KML from *Geodata Store* (1)

- Open Geodata Store. Enter School on the **Search** bench.
- It will provide a number of datasets that contain the name of schools. Select “Aided Primary Schools”
- The process of downloading and conversion of GeoJSON and KML is the same. Here we will use GeoJSON as an example to show the conversion process.



HONG KONG GEODATA STORE

Aided Primary Schools

中文

Showing 1 - 50 of 430 Record(s)

| Dataset | 數據集 | Facility Name | 設施名稱 | Address | 地址 | Students | 就讀學生 | Session | 學校授課 | District | 分區 | School Level | 學校類型 | Finance Type | 資助種類 | Religion | |
|---------|-----------------------|---------------|---|--------------|-------------------------------|----------|-------|---------|-----------|----------|----------|--------------|---------|--------------|-------|----------|-------------|
| 1 | Aided Primary Schools | 資助小學 | ABERDEEN ST PETER'S CATHOLIC PRIMARY SCHOOL | 香港仔聖伯多祿天主教小學 | SHEK PAI WAN ESTATE HONG KONG | 香港石排灣區 | CO-ED | 男女 | WHOLE DAY | 全日 | SOUTHERN | 南區 | PRIMARY | 小學 | AIDED | 資助 | CATHOLICISM |

Full Dataset

GeoJSON

GML

CSV

Excel

KML

school

After School Care Programme for Pre-primary Children
學前兒童課餘託管服務
Social Welfare Department
Last Update: 21 Mar 2022
Last Review: 23 Mar 2022

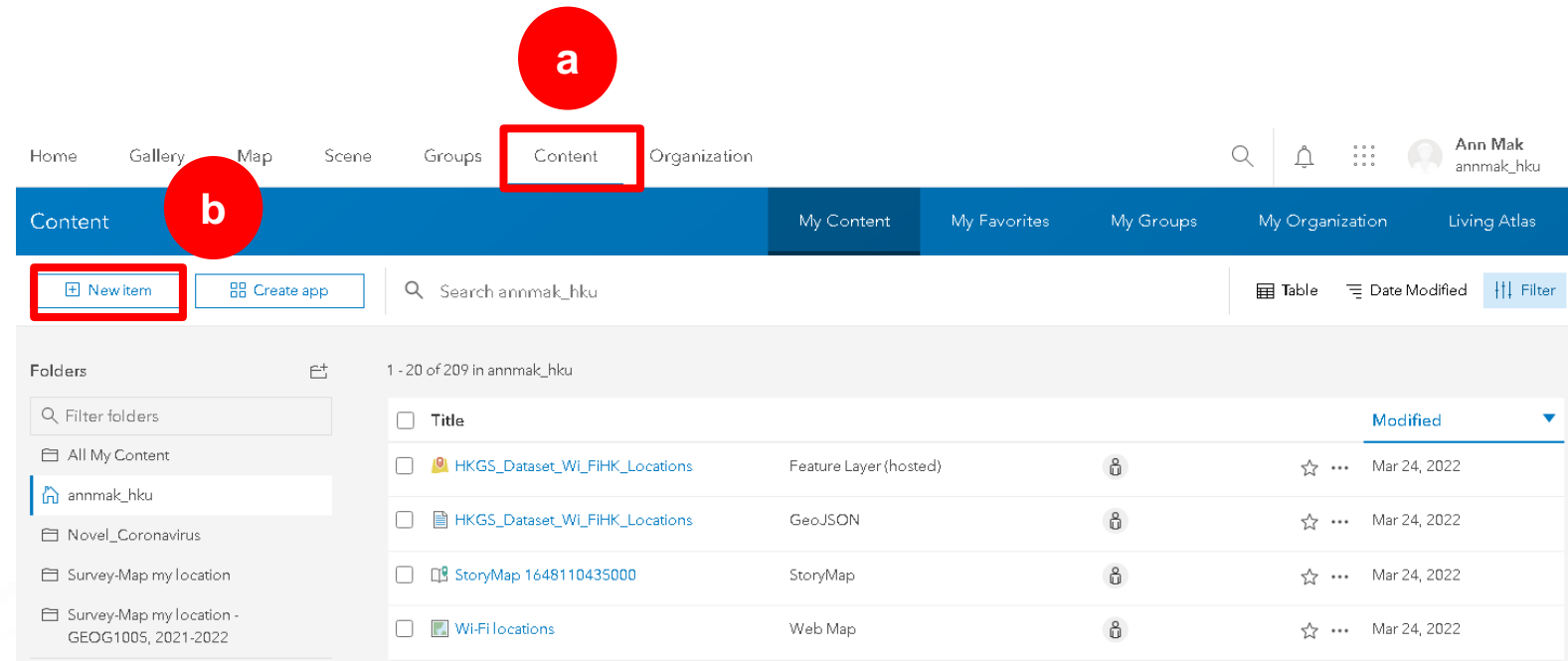
Aided Primary Schools
資助小學
Education Bureau
Last Update: 22 Dec 2021
Last Review: 23 Mar 2022

Aided Secondary Schools
資助中學
Education Bureau
Last Update: 22 Dec 2021
Last Review: 23 Mar 2022

Aided Special Schools
資助特殊學校

Download GeoJSON / KML from *Geodata Store* (2)

- Launch *ArcGIS Online* on your browser and sign in with your credentials (ask GeoLab for it if you do not own any account).
- a) Go to **Content** on the top of the page.
- It will interface to the page of **My Content**.
b) Click **New Item** located on the upper left corner.



Download GeoJSON / KML from *Geodata Store* (3)

- Again **New Item** (located on the upper left corner).
- Then drag the GeoJSON (or the KML) file from your hard drive to the drop box there. Then click **Next**.
- Make sure you check the radio box that add the GeoJSON (or the KML) as hosted feature layer. Then click **Next**. Click **Next**.

Drag your GeoJSON file from your hard drive to the drop box provided.

New item

Drag and drop your file or choose an option.

Your device Google Drive Dropbox OneDrive

Feature layer
Create an editable layer with fields copied from a template or feature layer.

Application
Link to an application on the web or create a new registered application.

Locator (view)
Create a new view of the ArcGIS World Geocoding Service.

Open

File name: HKGS_Dataset_Aided-Primary-Schools_2021-12-22-1013-27_fullset.geojson

Click Next

New item

File
HKGS_Dataset_Aided-Primary-Schools_2021-12-22-1013-27_fullset.geojson

How would you like to add this GeoJSON?

☒ Add HKGS_Dataset_Aided-Primary-Schools_2021-12-22-1013-27_fullset.geojson and create a hosted feature layer
Publish your GeoJSON file as a hosted feature layer. The file must be smaller than 100 MB. Features are published in the WGS 1984 Web Mercator coordinate system.

☐ Add HKGS_Dataset_Aided-Primary-Schools_2021-12-22-1013-27_fullset.geojson only
Add GeoJSON without publishing. File can be shared and downloaded by others or published at a later date.

Click Next

Download GeoJSON / KML from *Geodata Store* (4)

- d) Click **Next** to upload all the attributes fields in the hosted feature layer.
- e) You may rename the uploaded file and then click **Save** to save it.

New item

Fields

Select the fields that will be included in the hosted feature layer. Optionally, update the display name and field type.

Search for field

All types

31 selected Clear selection

| <input checked="" type="checkbox"/> | Field name | Display name | Type |
|-------------------------------------|---------------|---------------|--------|
| <input checked="" type="checkbox"/> | GMID | GMID | String |
| <input checked="" type="checkbox"/> | Northing | Northing | Single |
| <input checked="" type="checkbox"/> | Easting | Easting | Single |
| <input checked="" type="checkbox"/> | Dataset | Dataset | String |
| <input checked="" type="checkbox"/> | Facility Name | Facility Name | String |

d

Click Next



New item

File
HKGS_Dataset_Aided-Primary-Schools_2021-12-22-1013-27_fullset.geojson

Title
HKGS_Dataset_Aided_Primary_Schools_2021_12_22_1013_27_fullset

Folder
anmak_hku

Tags
Add tags

Summary
Add a summary

Characters left: 2048

e

Change the title of the layer if you want

f

Click Save

Open GeoJSON / KML in Map Viewer Classic

The screenshot shows the Map Viewer Classic interface. At the top, there is a navigation bar with links: Home, Gallery, Map, Scene, Groups, Content, Organization. Below this is a header for the dataset 'HKGS_Dataset_Aided_Primary_Schools_2021_12_22_1013_27_fullset'. A red arrow points to the 'Open in Map Viewer Classic' button in the right-hand menu. Below this, there are buttons for 'Open in Scene Viewer', 'Open in ArcGIS Desktop', 'Publish', and 'Create View Layer'. On the left, there is a 'Change Style' dialog box. It has two steps: 1. Choose an attribute to show (with a dropdown menu showing 'Show location only' highlighted by a red box and labeled 'a'), and 2. Select a drawing style (with a 'Location (Single symbol)' option selected and labeled 'b'). At the bottom of the dialog, there is a 'DONE' button highlighted by a red box and labeled 'c', and a 'CANCEL' button. The background shows a map of Hong Kong with school locations marked as black dots.

Open it in Map Viewer Classic

a. Select “Show location only” if you just want to show the locations of the schools on the map.

b. Click the **Option** box under **Location (Single symbol)** to change the symbol shape, size and colour.

c. Click **Done** to show it.

GML

Download GML from *Geodata Store* (1)

- Download census data (e.g. 2016 Population by census Statistics (By District Council District)) in both GML and Excel format.
- Only GML provides you the geometry data (the outline of the 18 districts) and also the census tables. Excel only provide the census tables but it provides reference for the field name.
- GML cannot be directly added in *ArcGIS Online* for mapping purpose.
- Instead you have to import it in *QGIS* for map display, then export it out as shapefiles or GeoJSON.
- Here we will demonstrate how to download “2016 Population By-census Statistics (By District Council District)” from *Geodata Store*

HONG KONG
GEODATA STORE

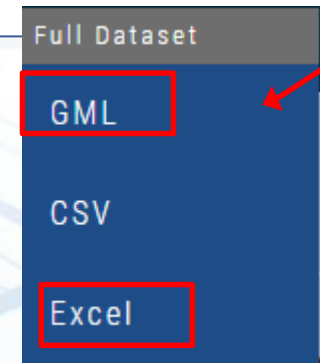
+

-

2016 Population By-census Statistics (By District Council District)

中文

This dataset are available in three types of formats: GML, CSV and Excel. Only GML provides you the geometry data (the outline of the 18 districts) and also the census tables. The other two only provide the census tables.



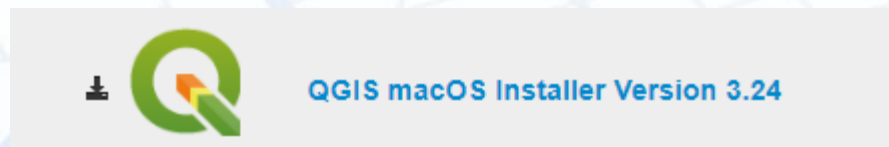
Download GML from *Geodata Store* (2)

Download *QGIS*

- Download a GIS/mapping software called *QGIS* (Free) (<https://qgis.org/en/site/forusers/download.html>)
- Available for Mac, OSX Linux and Windows
- If your computer is **Windows-Operated**, please perform the following:



- If your computer is **Mac OS**, then download the **Mac version**.

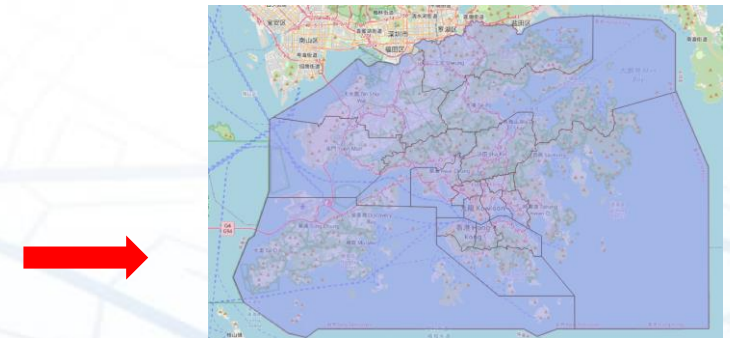
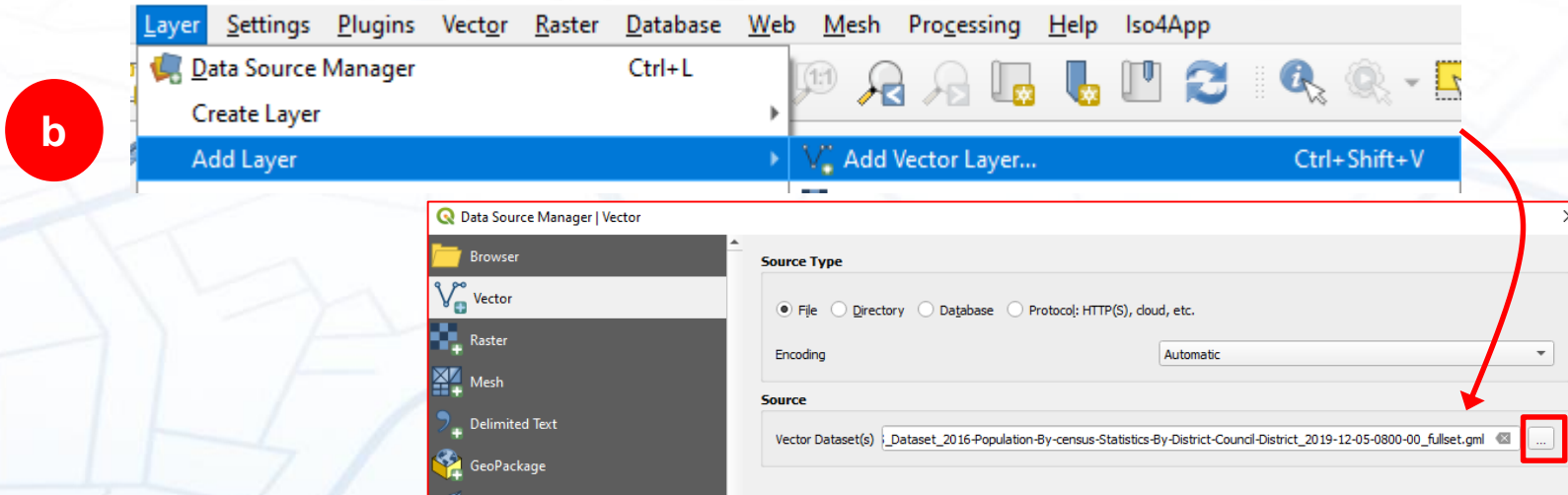
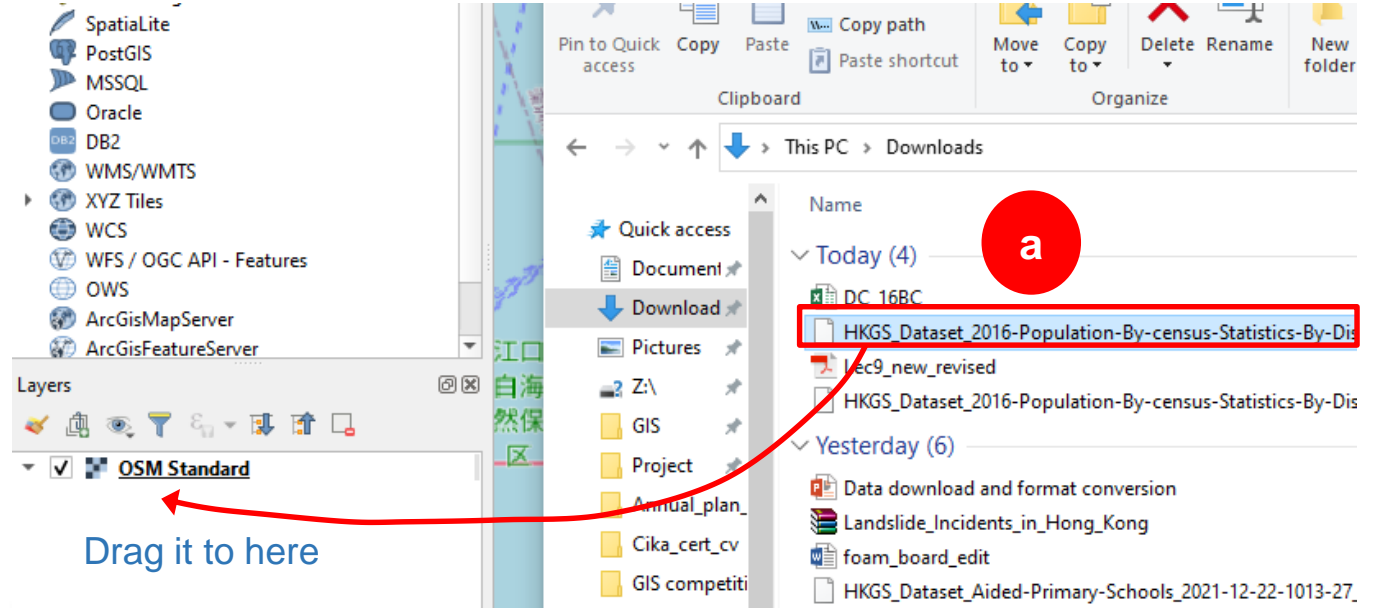


Download GML from *Geodata Store* (3)

Import GML to *QGIS*

There are two ways to upload the layer to *QGIS*:

- Launch *QGIS*, and drag your file from Window explorer to the Layers panel in *QGIS*.
- Or under **Layer** manual, click **Add Layer**, then **Add Vector Layer**. Then click the folder button besides the link field under **Source**. Navigate to your data path to add in the corresponding GML layer. Then click **Add**. The layer will directly show on the display area.



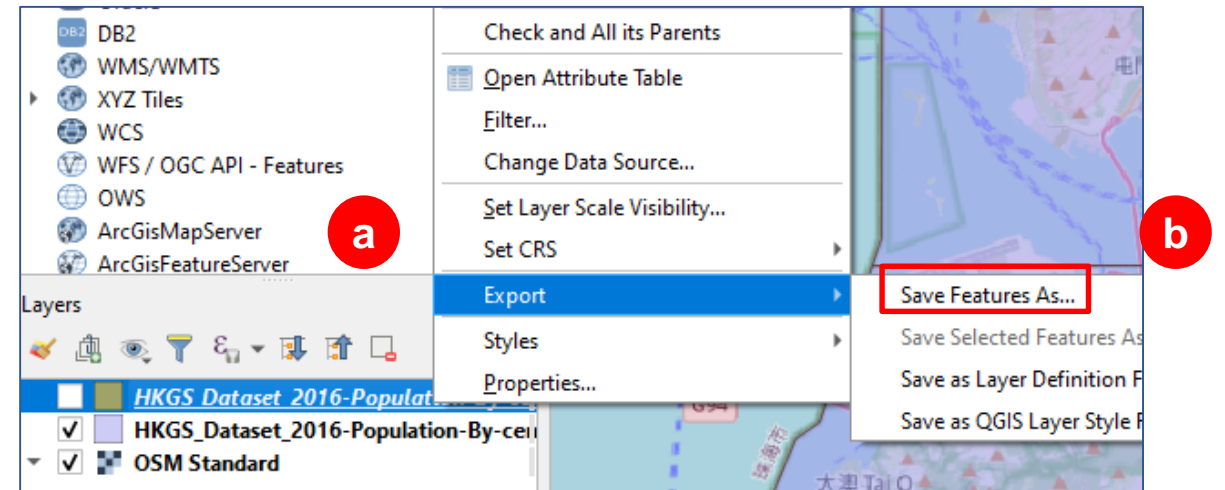
Click this to open the .gml layer saved in your hard drive and then add into it

Download GML from *Geodata Store* (4)

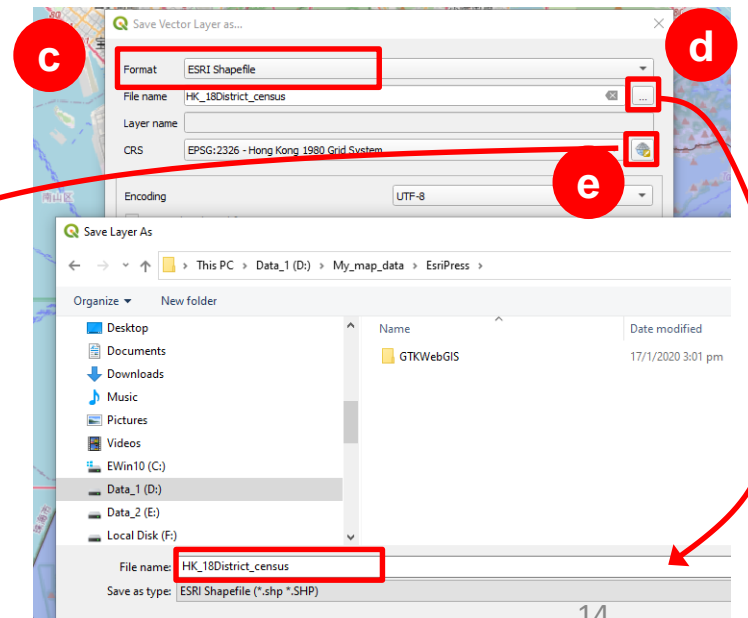
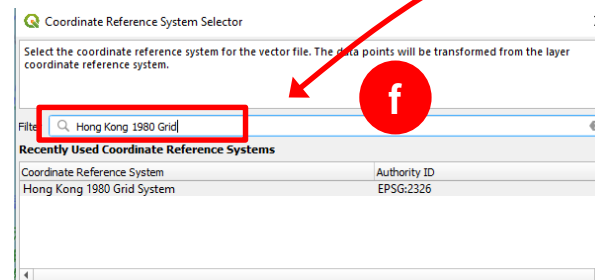
Export GML to Shapefiles

Then export it out in either the format of Shapefile (or GeoJSON).

- Right click the layer to open **Export**.
- Then click **Save Features as**.
- Click the dropdown arrow against **Format** to select “ESRI Shapefile”.
- Click the dropdown box against **File name** and save it in a desired data path by also giving a new name to it.
- If the projection system “EPSG2326 - Hong Kong 1980 Grid” is not already available, f) then click the box against CRS and search the projection system “Hong Kong 1980 Grid” to furnish it with the local projection system.
- When done, just click **OK** to export it as a new Shapefile. Then you can upload it in *ArcGIS Online*. Remember to zip it before you upload it.

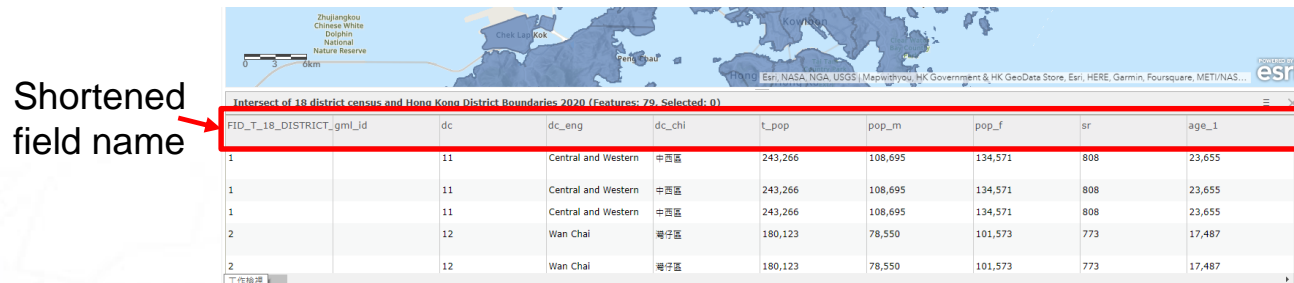


select the projection system
“Hong Kong 1980 Grid”

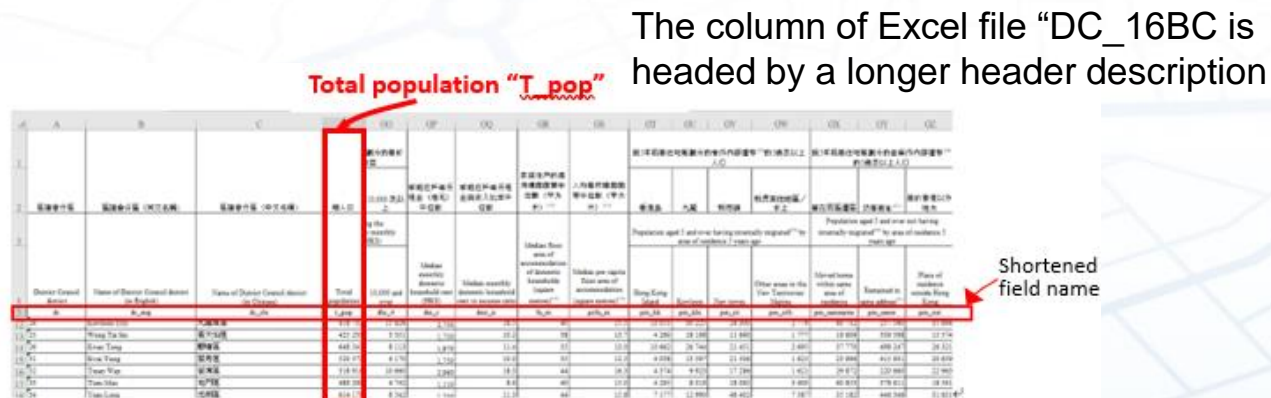


Translate the Field name of the Census table

- You may find the attribute table of the census table a bit confusing. The column field name has been shortened to 8 or fewer characteristics, as restricted by the schematic rules of shapefiles. E.g. What does “t_pop” represent?



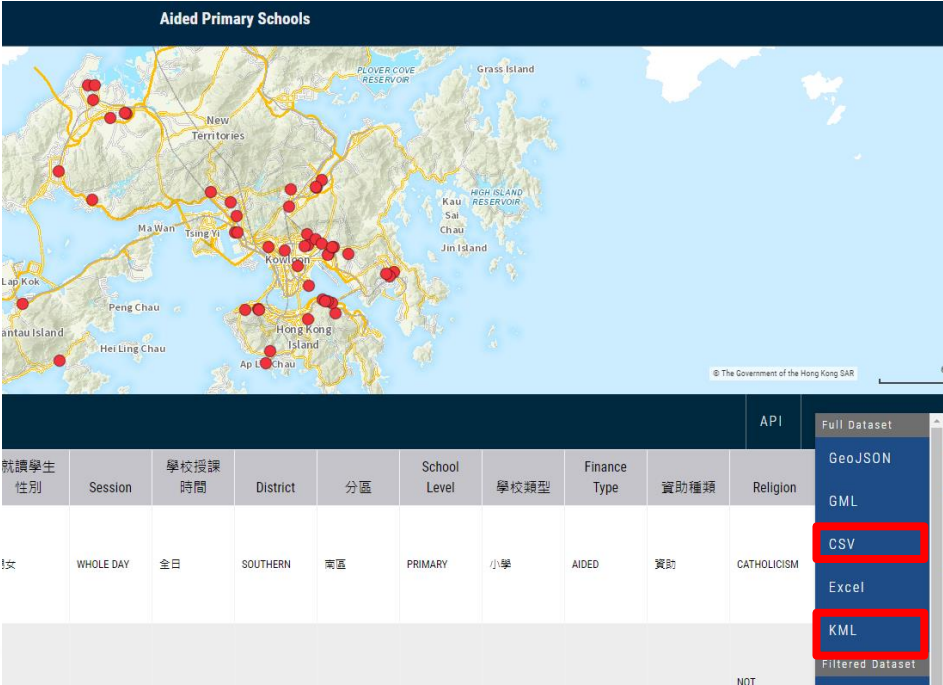
Open the *Excel* file “DC_16BC” from Geodata store. You may find each column field name is a long descriptive text spreading in two levels of heading that makes it easier to understand what each column represents. The shortened field name you find in the *shapefiles* is also shown in row 5 of the Excel table under the corresponding long descriptive name. In this way you can translate the shortened field with the long descriptive name shown in the Excel table for your reference.



Excel / CSV

Download Excel / CSV from *Geodata Store* (1)

- Both of CSV and Excel are spreadsheet that you can exam it in Excel.
- Here try to download “Aided Primary Schools” in either the CSV or Excel format.
- If you open CSV or Excel in the *Excel* program, you will find there are 4 columns already registered the location of each school in a pair of co-ordinates.
- We will make use of the latitude and longitude to locate each school on a map.



The x, y in the local projection system – HK 1980 Grid

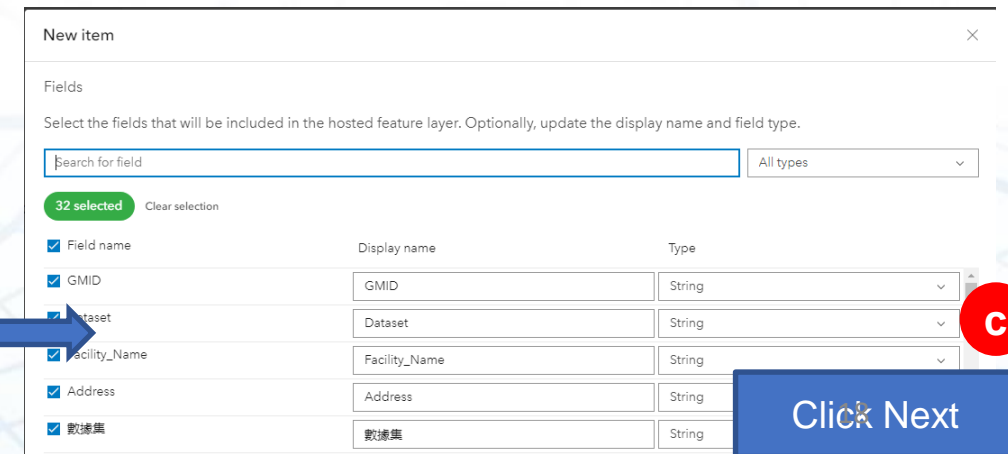
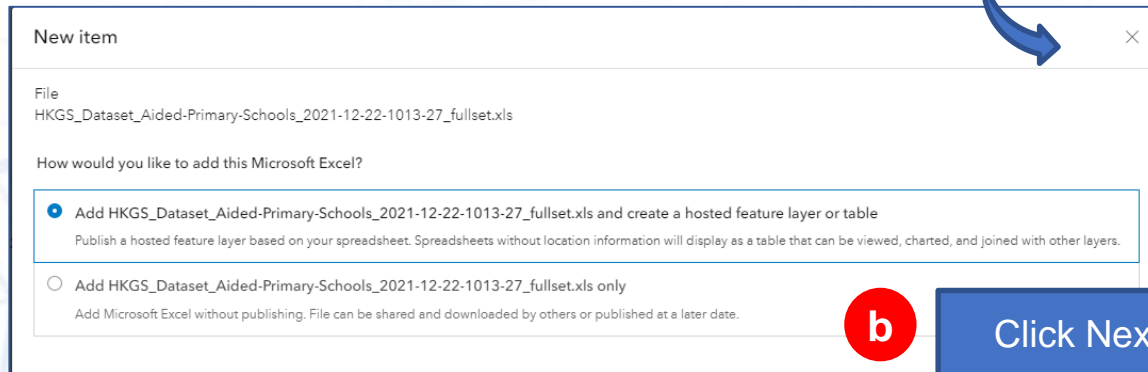
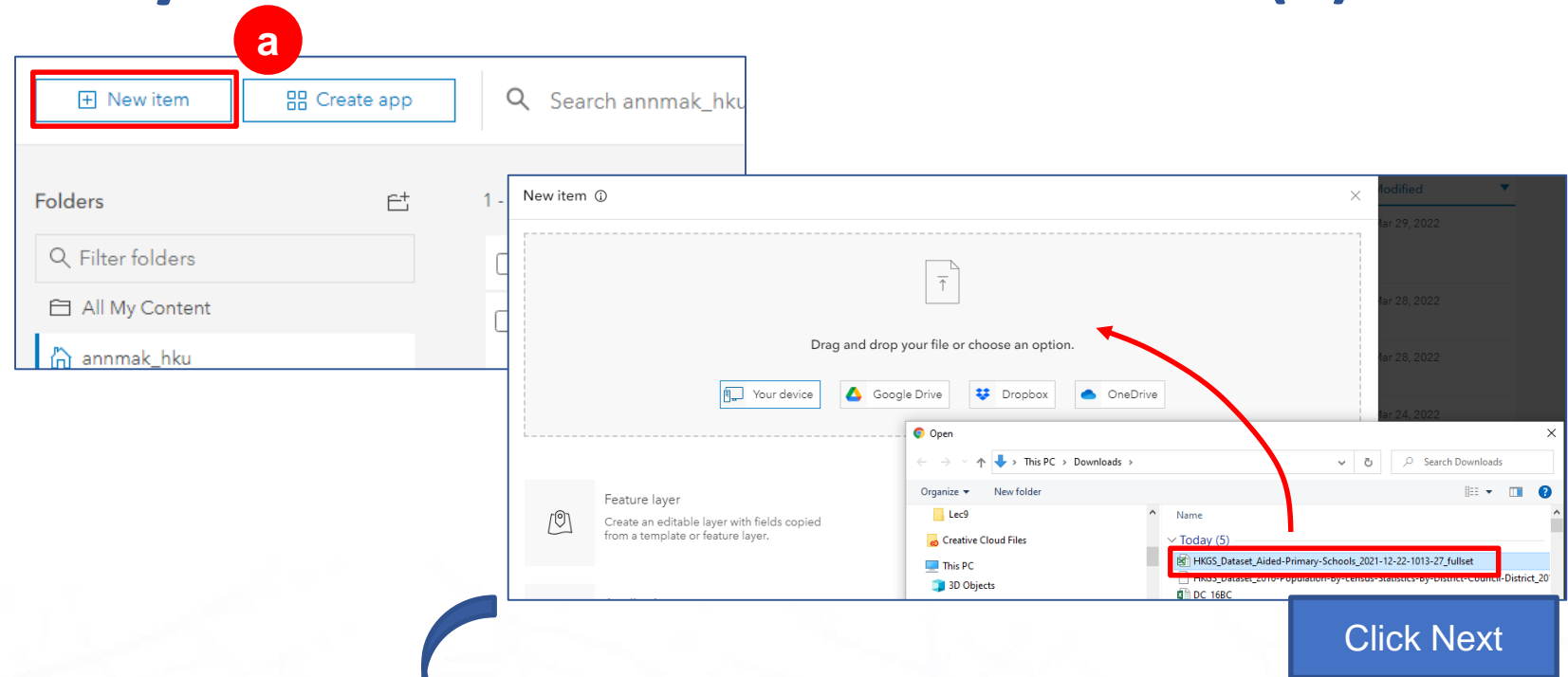
Latitude and longitude in spherical co-ordinates system

| W | X | Y | Z | AA | AB | AC | AD | AE |
|---------|--------------|------------|-----------|----------|----------|-------------|--------------|----|
| site 網頁 | Religion 宗教 | SCHOO 學校編號 | Northing | Easting | Latitude | Longitude | | |
| | CATHOLIC 天主教 | 512060000 | 512060000 | 821330.0 | 837359.0 | 22.33101279 | 114.18746445 | |
| | PROTEST. 基督教 | 115584000 | 115584000 | 828988.0 | 838442.0 | 22.40016765 | 114.19798732 | |
| | NOT APPL 不適用 | 618276000 | 618276000 | 820287.0 | 835492.0 | 22.32159406 | 114.16934241 | |
| | PROTEST. 基督教 | 618128000 | 618128000 | 840524.0 | 834094.0 | 22.50434289 | 114.15574568 | |
| | CATHOLIC 天主教 | 170054000 | 170054000 | 814908.0 | 837050.0 | 22.27301836 | 114.1844619 | |
| | PROTEST. 基督教 | 115002000 | 115002000 | 826772.0 | 836103.0 | 22.38015741 | 114.17527219 | |
| | CATHOLIC 天主教 | 513130000 | 513130000 | 824658.0 | 834101.0 | 22.33307048 | 114.15586047 | |

The process of uploading Excel and CSV in *ArcGIS Online* will be the same.

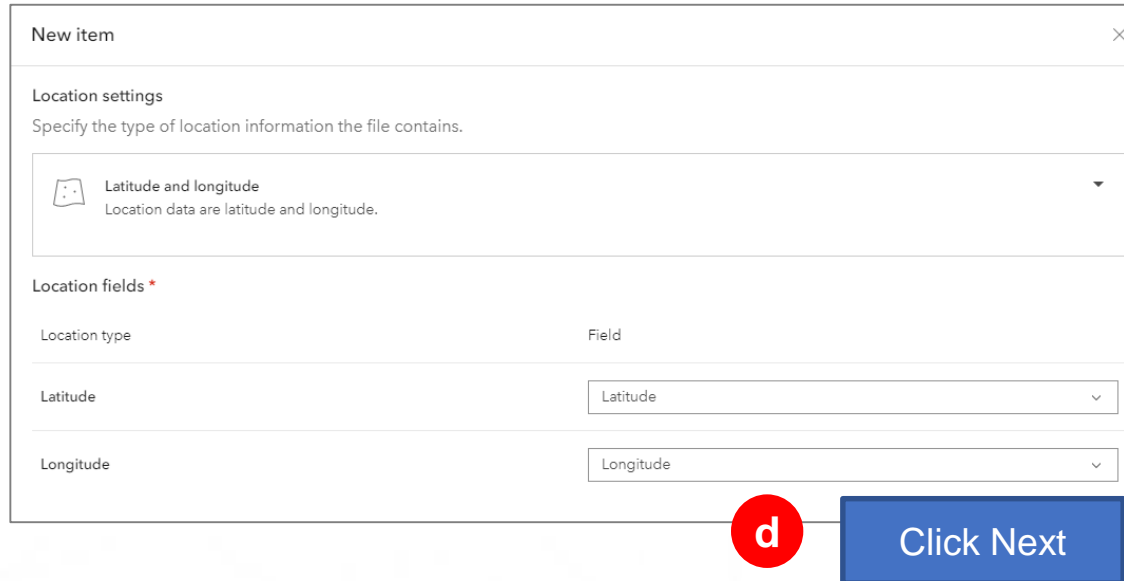
Download Excel / CSV from *Geodata Store* (2)

- Launch *ArcGIS Online* on your browser.
- a) Click **New Item**, then drag the Excel (or CSV) file from your hard drive to the drop box there. Then click **Next**.
- b) Make sure you check the radio box that add the Excel (or CSV) as hosted feature layer. Then click **Next**.
- c) Click **Next** to upload all the attributes fields in the hosted feature layer.



Download Excel / CSV from *Geodata Store* (3)

- d) Next you will use the **Latitude** and in your *Excel (or CSV)* file as the **location setting**. By default, they will immediately identify the two columns that named as Latitude and Longitude.
- e) Next it will ask you to provide the name to this imported Excel file. You can give a new name or keep the original name. Then click **Saved** to finish it.
- You then open it in a **Map Viewer** to check the school locations and proceed to further steps.



New item

Location settings
Specify the type of location information the file contains.

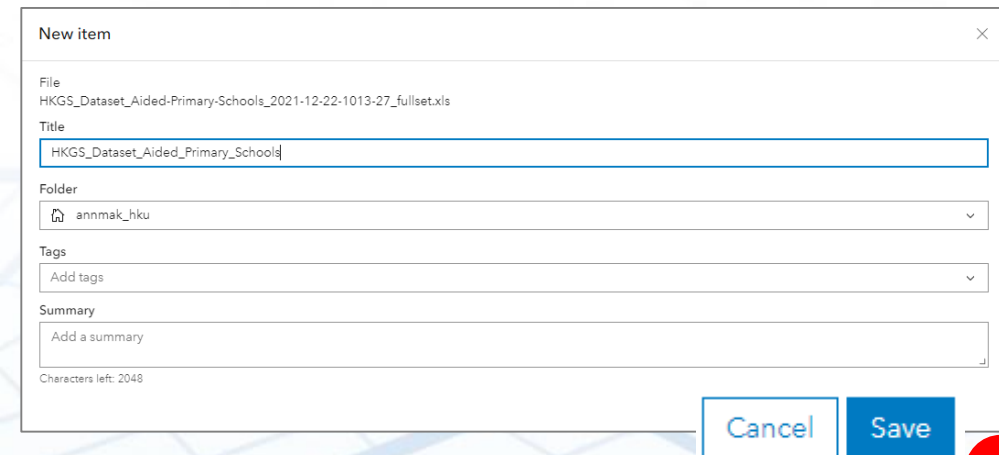
Latitude and longitude
Location data are latitude and longitude.

Location fields *

| Location type | Field |
|---------------|-----------|
| Latitude | Latitude |
| Longitude | Longitude |

d Click Next

Use Latitude and Longitude to locate the schools. DO NOT use Northing and Easting as the *Map Viewer* using the spherical co-ordinates system that only adopts latitude and longitude.



New item

File
HKGS_Dataset_Aided-Primary-Schools_2021-12-22-1013-27_fullset.xls

Title
HKGS_Dataset_Aided_Primary_Schools

Folder
anmak_hku

Tags
Add tags

Summary
Add a summary

Characters left: 2048

Cancel Save

Shapefile

Download Shapefile from Open Geo-Spatial Data in HK

- Access [Open Geo-spatial data in HK](#)
- This Web site provides many spatial data (mainly sourced from the Government) that are ready in a GIS data format such as shapefiles, KML, Geojson, CSV, etc.
- It usually provides you two options of output: **Data** and **Map**.

The screenshot shows the Esri China Hong Kong search interface. At the top, there's a search bar with 'landslide' entered. Below the search bar, a large blue banner reads 'Type Landslide in the search bench'. The results are categorized into 'All', 'Data', 'Documents', and 'Apps & Maps'. The 'Data' category is selected, showing 1 - 8 of 8 results. On the left, there are filters for 'Content Type' (Feature Layer, Web Map), 'Tags', and 'Last Updated'. The first result, 'Landslide Incidents in Hong Kong', is highlighted with a red box. It shows the title, publisher 'Esri China (Hong Kong) Ltd. | esrichinahk', a description, and metadata: 'Type: Feature Layer', 'Last Updated: June 29, 2021', 'Rows: 4,185', and 'Tags: Landslide, CEDD, Safety, Environment, Incidents'. The second result, 'Landslide Incidents in Hong Kong', is also highlighted with a red box. It shows the title, publisher, a description, and metadata: 'Type: Web Map', 'Uploaded: August 18, 2021', and 'Tags: Landslide, Hong Kong, Safety, Environment, CEDD, In...'. The background of the slide features a faint map of Hong Kong.

esri China HONG KONG

Search: landslide

Type Landslide in the search bench

All Data Documents Apps & Maps

Filters Reset 1 - 8 of 8 results Relevance

Content Type ^
☐ Feature Layer
☐ Web Map

Tags v

Last Updated v

Data

Landslide Incidents in Hong Kong
Esri China (Hong Kong) Ltd. | esrichinahk

This layer shows **Landslide** Incidents occurred from 2001-2019 in Hong Kong. It is a subset of the geo-referenced public facility data made available by the Civil Engineering and Development...

Type: Feature Layer
Last Updated: June 29, 2021

Rows: 4,185
Tags: Landslide, CEDD, Safety, Environment, Incidents

Map

Landslide Incidents in Hong Kong
Esri China (Hong Kong) Ltd. | esrichinahk

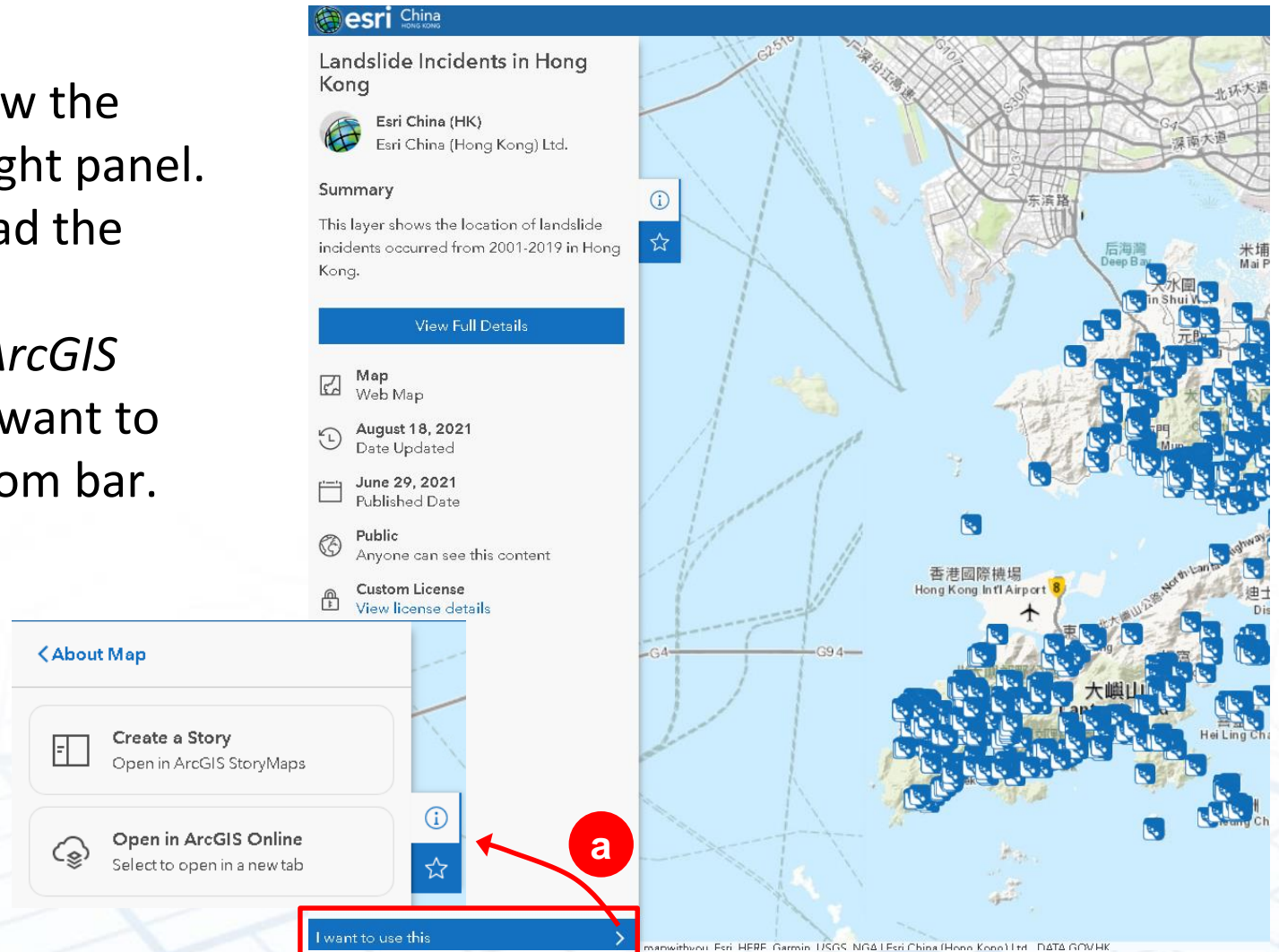
This layer shows **Landslide** Incidents occurred from 2001-2019 in Hong Kong. It is a subset of the geo-referenced public facility data made available by the Civil Engineering and Development...

Type: Web Map
Uploaded: August 18, 2021

Tags: Landslide, Hong Kong, Safety, Environment, CEDD, In...

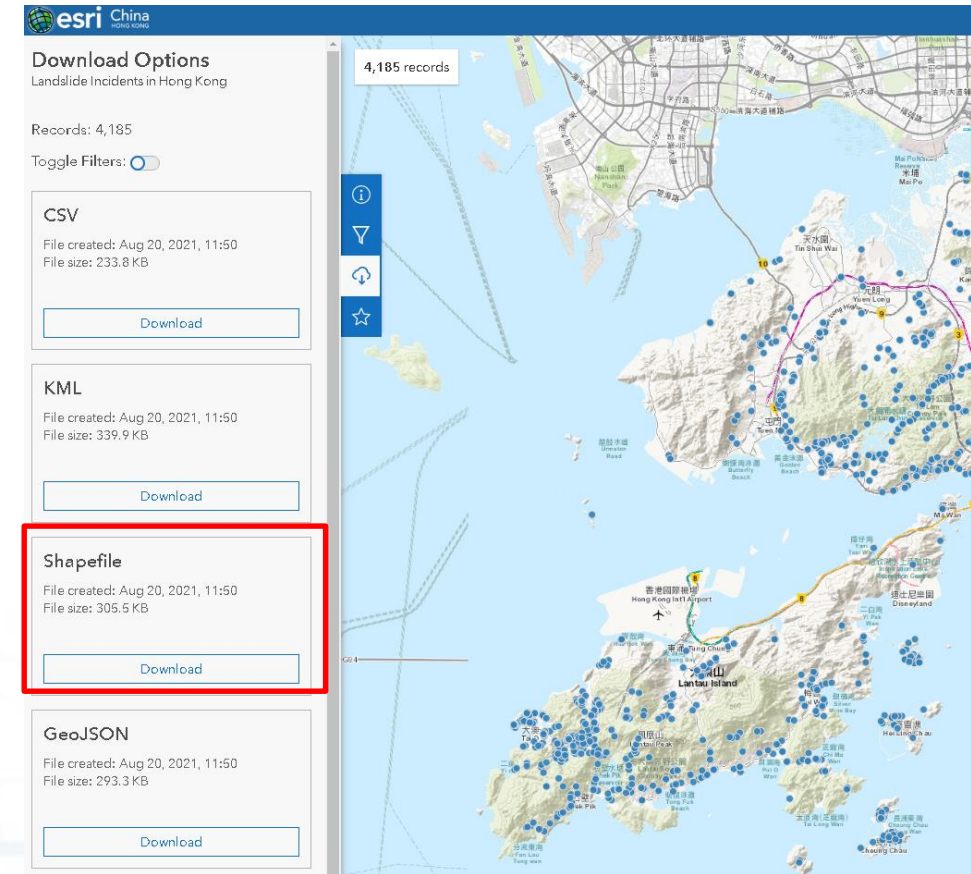
Select “Map” from Open Geo-Spatial Data in HK

- If you select **Map**, it will just show the spatial data in the map on the right panel.
- It does not allow you to download the data.
- But you can display the map in *ArcGIS Online* or *StoryMaps*. a) Click “I want to use this” located at the left bottom bar.
- Two options are given: Create a Story (in *StoryMaps*) or Open in ArcGIS Online. Select a desired option to directly display or analyse the data in the application you selected.



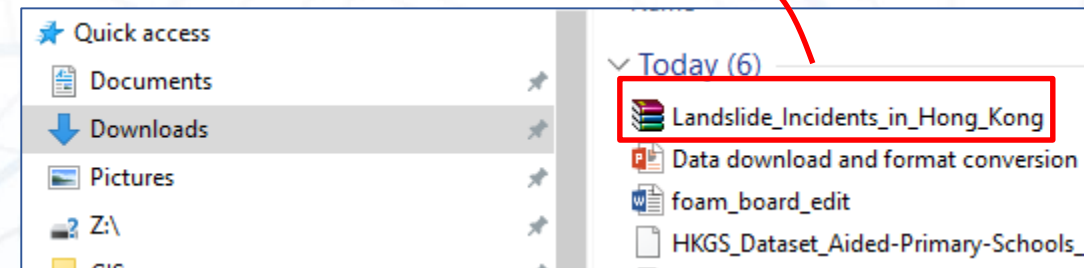
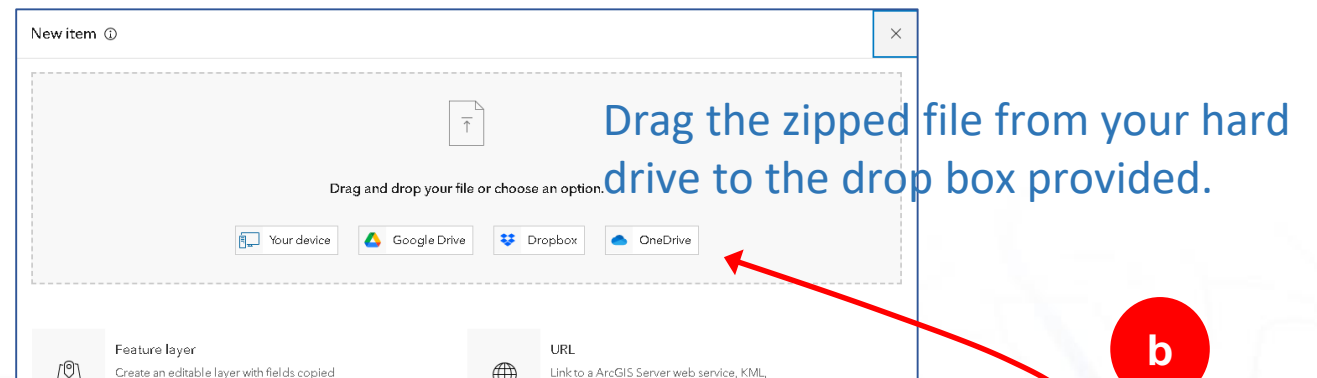
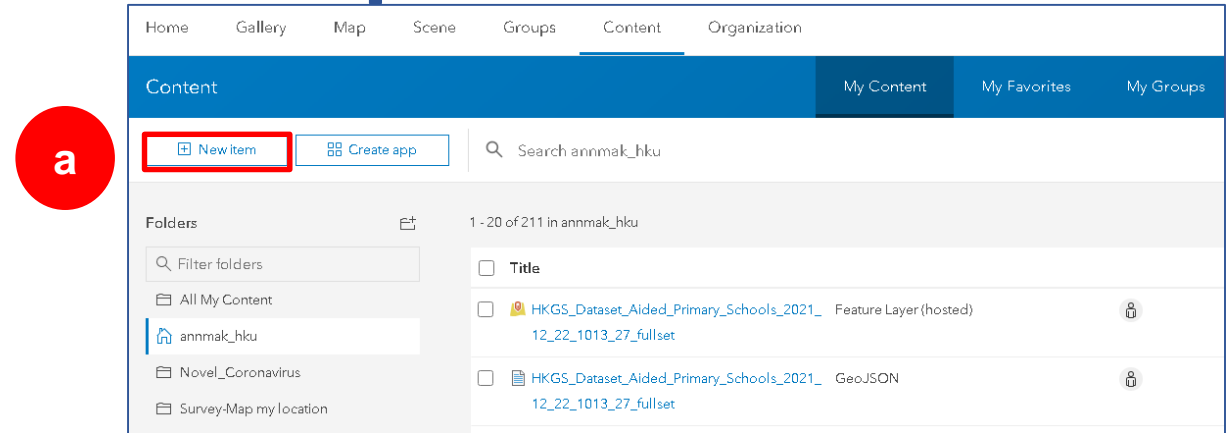
Select “Data” from Open Geo-Spatial Data in HK (1)

- If you select **Data** Option, it will interface you to a page for downloading data in different formats.
- Select **Shapefile** and click **Download**.
- The download file will be saved in **Download** folder in a zip file.
- If you unzip it, it actually consists of a number of related Shapefiles.
- You have to keep all the files intact so you can open and display them properly in an intended application.
- If you want to transfer them to *ArcGIS Online* for further processing, then you must warp up all the files in a single zip file before you upload it.



Select “Data” from Open Geo-Spatial Data in HK (2)

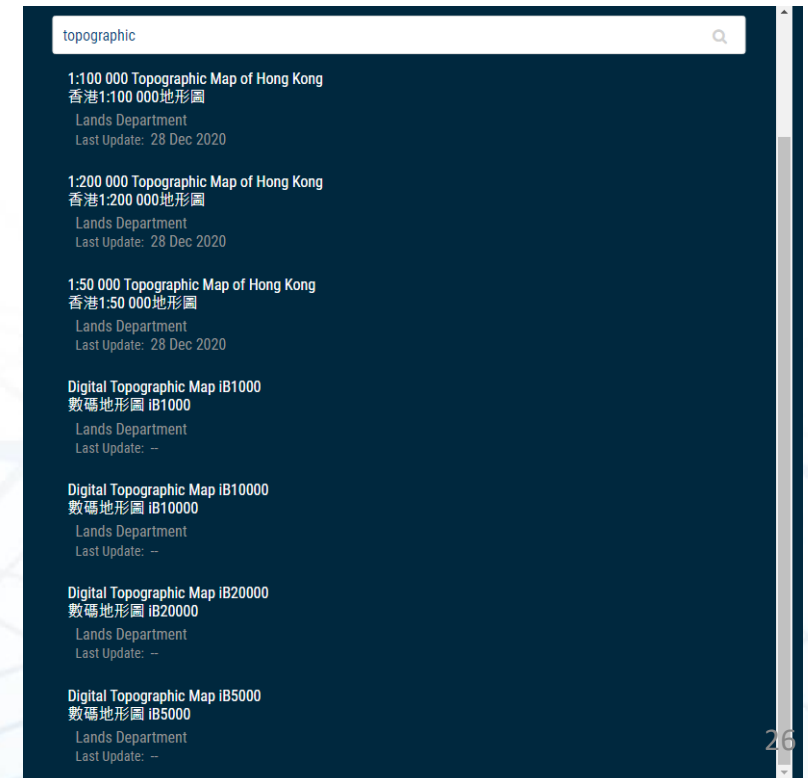
- Then launch *ArcGIS Online*
- Similar to open the GeoJSON /KML/GeoJSON in ArcGIS Online, go to **Content** on the top of the page.
- It will switch you to **My Content**. a) Click **New Item** located on the upper left corner.
- b) Drag the zipped Shapefile to the box under **New Item**.
- Then click **Next** on next three successive steps, until it asks you to **Save** the file. Keep all the default setting.
- Open it in a new *Map Viewer* for further processing and analyses in it.



Topographic Maps

Download Topographic Maps from *Geodata Store* (1)

- Topographic map refers all natural and man-made features you can find on the earth surface.
- Topographic maps in Hong Kong are developed by the Lands Department offering in different map scales: iB1000, iB5000, iB10000 and iB20000, and so forth. The smaller the value, the larger the scale, which provide more details but cover a smaller area.
- Go to [Geodata Store](#) and enter “topographic” on the **Search Bench**.
- All the topographic maps will show to you.



Download Topographic Maps from *Geodata Store* (2)

- Click Digital Topographic Map iB1000.
- Wait for a while, it will interface you to a **Search Panel of HKMS 2.0** where you can search your desired map tiles.
- It is because the whole Hong Kong will be divided into different map tiles. iB1000 is covered by over 200 map tiles. You need to enter your desired map tile ID so the search engine can retrieve the right maps for you.
- If this is your first time to fetch maps from here, you may not have the idea what tile ID shall you enter.

Digital Topographic Map iB1000
數碼地形圖 iB1000

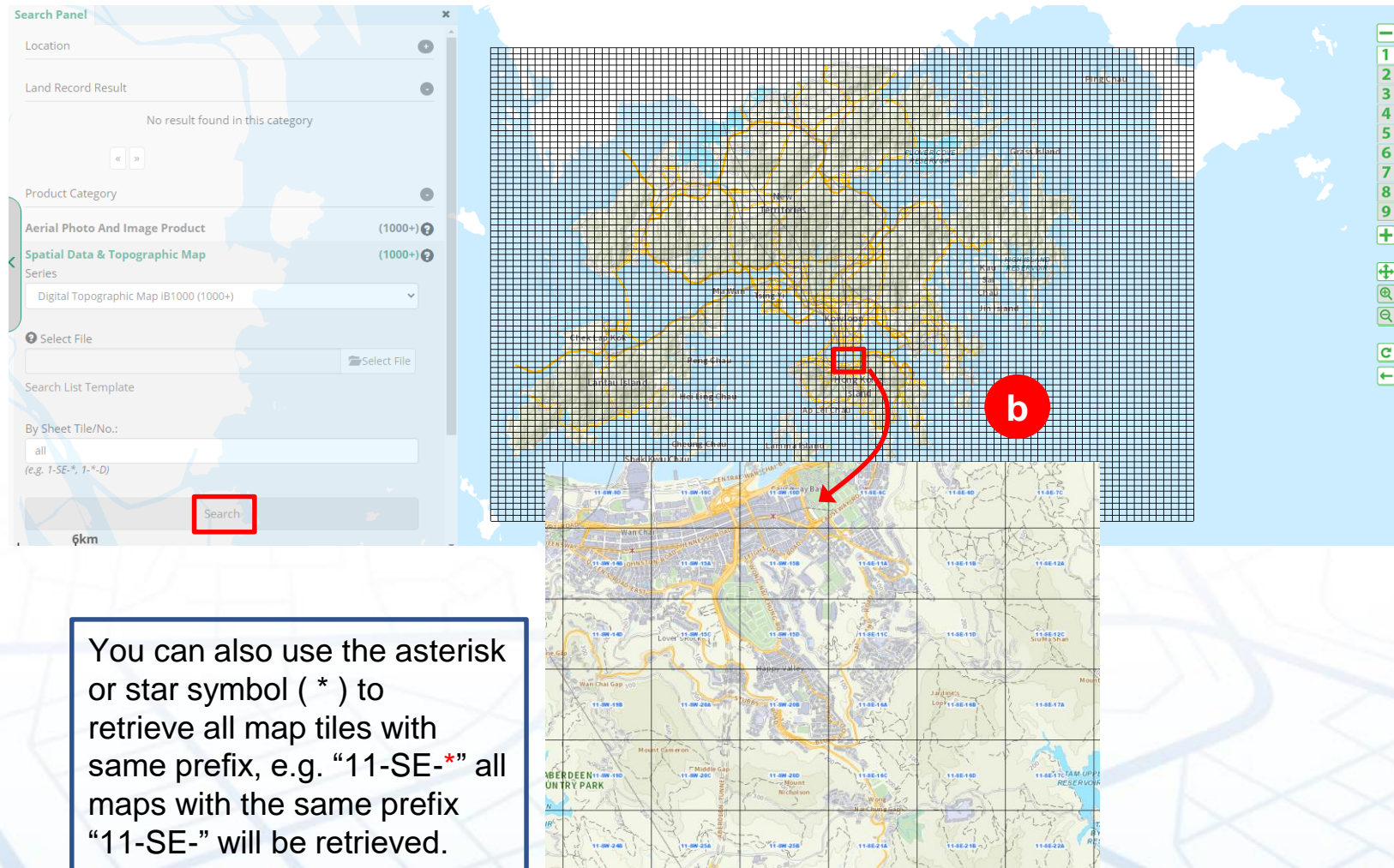
Lands Department
Last Update: --

Hong Kong Map Service 2.0 is a website providing online service for ordering and downloading digital map products, paper map products and cadastral survey records, to the public

The screenshot shows the 'Search Panel' interface of the Hong Kong Map Service 2.0. It features a search bar at the top, followed by a 'Land Record Result' section which currently displays 'No result found in this category'. Below this is a 'Product Category' section with a list of categories: 'Aerial Photo And Image Product' (1000+), 'Spatial Data & Topographic Map' (1000+), and 'Series'. The 'Series' dropdown is set to 'Digital Topographic Map iB1000 (1000+)'. There is a 'Select File' button and a 'Search List Template' section. The 'By Sheet Tile/No.:' section has a text input field with a placeholder '(e.g. 1-SE-*, 1-*-D)'. A 'Search' button is at the bottom. The background shows a map of Hong Kong with labels for Chek Lap Kok, Lantau Island, Shek, and Tai A Chau. A scale bar indicates 6km, and coordinates are shown at the bottom: northing(m): 830278, easting(m): 802073.

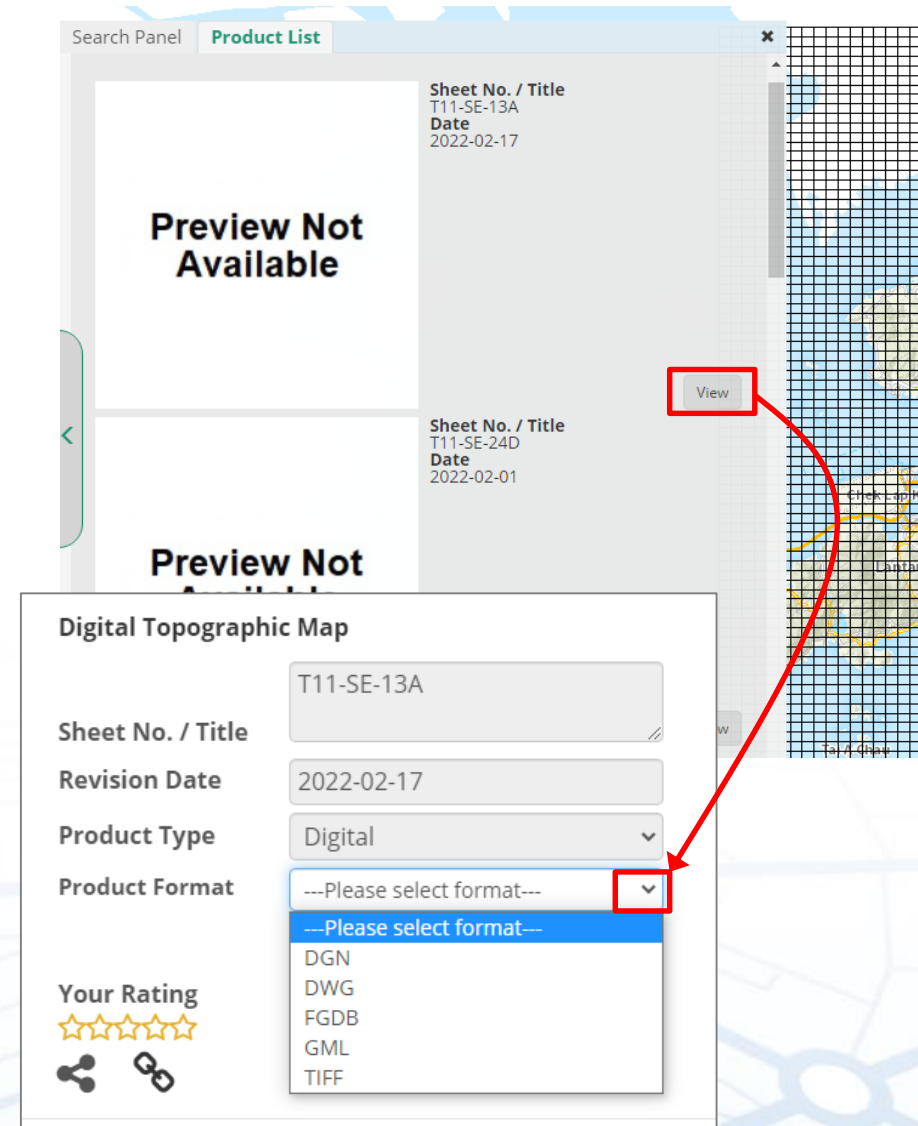
Download Topographic Maps from *Geodata Store* (3)

- a) Click **Search** button, it will immediately b) show you all the map tiles.
- Zoom in the map by scrolling the mouse wheel towards the screen or click the zoom level “5” (located on the right side of the map panel). Then you will see the ID of each sheet tile.
- When you get the tile number, enter it into the search field again to activate the search.



Download Topographic Maps from *Geodata Store* (4)

- When all the desired map tiles are retrieved, click the **View** button on an available sheet to begin the download process.
- Click the dropdown arrow against Product Format. Here you can select one of the map format



File Formats of Topographic Maps

- DGN - Computer-Aid Designed (CAD), not supported by ArcGIS Online
- DWG - Computer-Aid Designed (CAD), not supported by ArcGIS Online
- FGDB – Feature Geodatabase, propriety data of ArcGIS desktop. Support by ArcGIS Online, but it must be zipped first. You can add it through ArcGIS Online, select **Content** > **My Content** > **New item**. Then follow the wizard to add the FGDB to ArcGIS online.
- GML – Not supported by ArcGIS Online, consult pages 10 -14 of this manual if you want to use this dataset.
- TIFF - Image file (.jpg, .jpeg, .png, .tif, or .tiff) can be uploaded (but not displayed) on the map viewer of *ArcGIS Online*

Please consult this site for the data layers that you want to add into *ArcGIS Online* :
<https://doc.arcgis.com/en/arcgis-online/reference/supported-items.htm>

Download Topographic Maps from *Geodata Store* (5)

- a) Click the **Add to download** queue button after you have selected a desired map format.
- It will inform you when it is available in the download queue. Close it.
- b) Scroll up to the top of site. Under the banner of HKMS 2.0, you will see the download queue box.
- c) Click the box to show the download info page. d) Click the download arrow under the **Product Category** to begin the download process.

The screenshot illustrates the steps to download a topographic map. At the top, a 'Digital Topographic Map' form is shown with fields for Sheet No. / Title (T11-SE-13A), Revision Date (2022-02-17), Product Type (Digital), and Product Format (FGDB). A red box highlights the 'Add to download queue' button, labeled 'a'. Below this is a 'Your Rating' section with five stars. A red box labeled 'b' points to the HKMS 2.0 banner. A red box labeled 'c' points to a download queue box containing a download icon and a red box labeled 'd' points to a download arrow icon. A red arrow points from the download arrow icon to the download arrow icon in the download queue box.

Digital Topographic Map

Sheet No. / Title: T11-SE-13A

Revision Date: 2022-02-17

Product Type: Digital

Product Format: FGDB

Terms and Conditions: Add to download queue

Your Rating: ★★★★★

HKMS 2.0

REDEMPTION COPYRIGHT LICENCE CONTACT US

Clear All Clear Downloaded Products

The system response time may be lengthened due to overwhelming demands in the initial stage of opening up of digital map products. We apologise for any inconvenience caused.

| Product Details | | Product Category |
|----------------------|--------------------------------|--------------------------------|
| Product Name: | Digital Topographic Map iB1000 | Spatial Data & Topographic Map |
| Sheet No./Photo No.: | T11-SE-13A | |
| Format: | FGDB | |
| Revision Date: | 2022-02-17 | |

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31

More conversion processes

For more conversion information for data from Hong Kong Geodata Store especially on the following:

- 3D Visualisation Map & 3D Photo-realistic models
- 3D Pedestrian Network
- Intelligent Road Network from Transport Dept

Please visit this site for more conversion solutions:

<https://www.esrichina.hk/en-hk/technical-support/resources-for-hk-user>