

Open Data Documentation

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1. Purpose

This document was created to showcase open data resources available to surveyors. Many Web Map Services (WMS) are available to the public as open data and can be utilised by surveyors using an open Geographic Information system (GIS) program, such as [QGIS](#).

2. Disclaimer

This document was prepared for the Board of Surveying and Spatial Information (BOSSI) Spatial Information Committee for the purpose of disseminating information to benefit the public. It builds upon work contributed by Spatial Information Committee members Gabriel Van Wyk, Roshni Sharma, Brittany Baker and the GCA GIS for Surveyors webinar series.

The committee took care to ensure information in this document is correct and accurate as possible as of 12 September 2023.

The committee does not guarantee and accepts no legal liability arising from, or connected to, the use of any material contained in this document, or any linked site. The committee recommends users to exercise their own care with respect to use of this website and that users carefully evaluate the accuracy, currency, completeness, and relevance of the material in this document for their purposes. This document is not a substitute for independent professional advice and users should obtain appropriate professional advice relevant to their circumstances.

QGIS has been used in this documentation as it is a free and open source software. A variety of commercial alternatives are available and users should choose software that meets their needs.

3. About Open Data

The NSW Government Open Data Policy focuses on datasets as an aspect of information defined in the *Government Information (Public Access) Act 2009* (GIPA Act). A dataset is an identifiable collection of government-held information or data. Most commonly a dataset refers to a single database table, a single statistical data matrix, a collection of closely related tables or a subset of data within a larger dataset.

Data is open to the extent that its management, release and characteristics meet the principles of openness outlined in this policy. Open data should be both technically available and usable and have licensing frameworks in place to facilitate its release and use. For further information visit: <https://data.nsw.gov.au/nsw-government-open-data-policy>

Web Map Services (WMS) and Web Feature Services (WFS) provide a way of delivering geospatial data using established internet protocols developed by the [Open Geospatial Consortium](#). WMS and WMTS services deliver spatial information as map images (for example: JPEG, PNG). WFS services deliver data in a standard XML format. WMS can be found on any of the following [NSW Open Data Portals](#), and viewed in a GIS program. Follow the instructions below detailing this process. Further information can be found in the [Appendix](#).

Online NSW Open Data Portals

- [Data.nsw.gov.au](#)
- [Spatial Collaboration Portal](#)
- [Environmental Data Portal, SEED](#)
- [NSW Department of Education](#)
- [NSW Health](#)
- [Transport for NSW](#)
- [NSW Bureau of Crime Statistics and Research](#)

- [NSW Flood Portal](#)
- [ePlanning](#)
- [State Insurance Regulatory Authority](#)

4. Exemplar Open Data Workflow

Geospatial datasets are critical for modern planning, reporting, and mapping workflows. Surveyors can use open geospatial data during multiple stages of survey planning and preparation, along with use cases during development, implementation, and monitoring of a site's location, environmental impact mitigation, and infrastructure design. Online web services are one way to access a wealth of geospatial information available for these workflows. Internet connection is required to follow these instructions. It is possible to download datasets to use offline in some circumstances, but this is not covered by this document.

There are detailed instructions for using open data online in three phases:

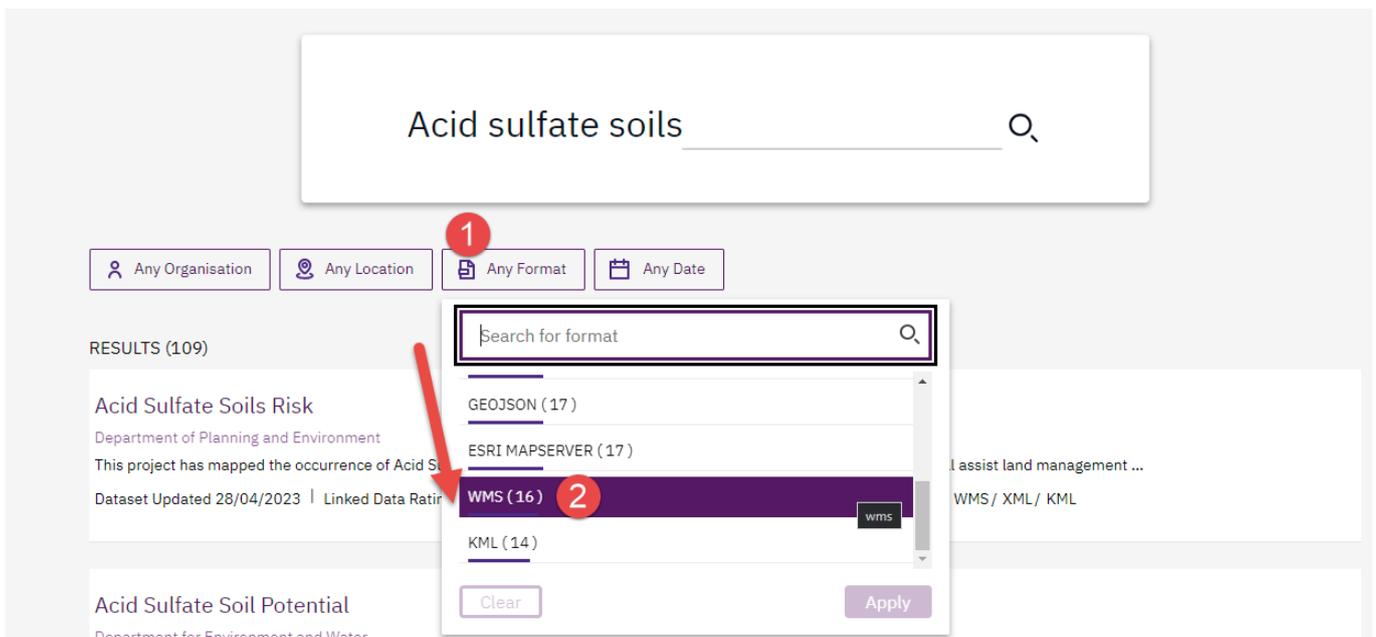
1. Searching for Open Data Online,
2. Viewing in QGIS, and
3. Loading Shared Files in QGIS.

Searching for Open Data Online

1. Open an internet browser (for example, Chrome or Edge).
2. Navigate to <https://www.data.gov.au/home>
3. Search for a topic of choice (for example, Acid Sulfate Soils):



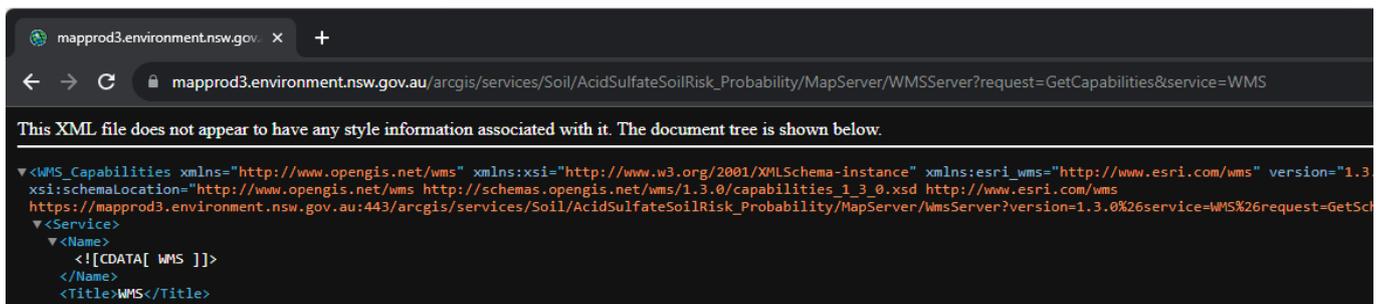
4. Filter the results by format to find geospatially-enabled layers available (WMS, WMTS, WFS, or Esri MapServer). If you are looking to view the data ONLY, select 'WMS'.



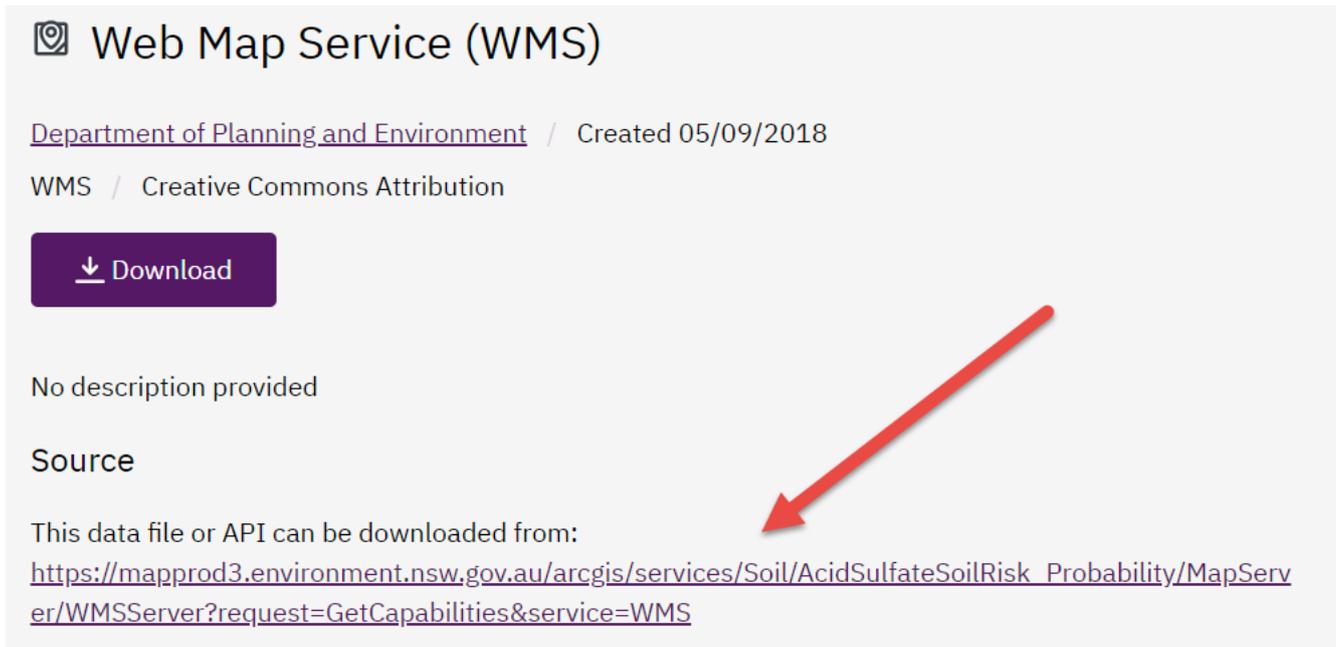
- 5. Select a record from the results, that matches your requirement and contains a geospatial Web Service (WMS, WMTS, WFS, or Esri MapServer).
- 6. Scroll down the record's page to find the item that matches a web service format:



- 7. Copy the WMS URL. On this website you may either select 'Download' to be taken to the WMS link:



OR you can click on the item, and be directed to a page with the WMS link:



Web Map Service (WMS)

[Department of Planning and Environment](#) / Created 05/09/2018

WMS / Creative Commons Attribution

[Download](#)

No description provided

Source

This data file or API can be downloaded from:
https://mapprod3.environment.nsw.gov.au/arcgis/services/Soil/AcidSulfateSoilRisk_Probability/MapServer/WMSServer?request=GetCapabilities&service=WMS

8. Keep the copied WMS link handy for the next phase, to view in QGIS.

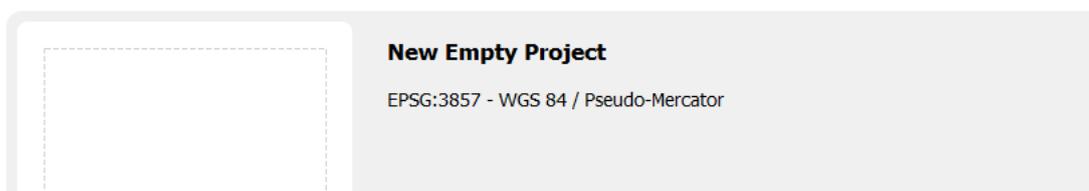
In this example we will copy:

https://mapprod3.environment.nsw.gov.au/arcgis/services/Soil/AcidSulfateSoilRisk_Probability/MapServer/WMSServer?request=GetCapabilities&service=WMS

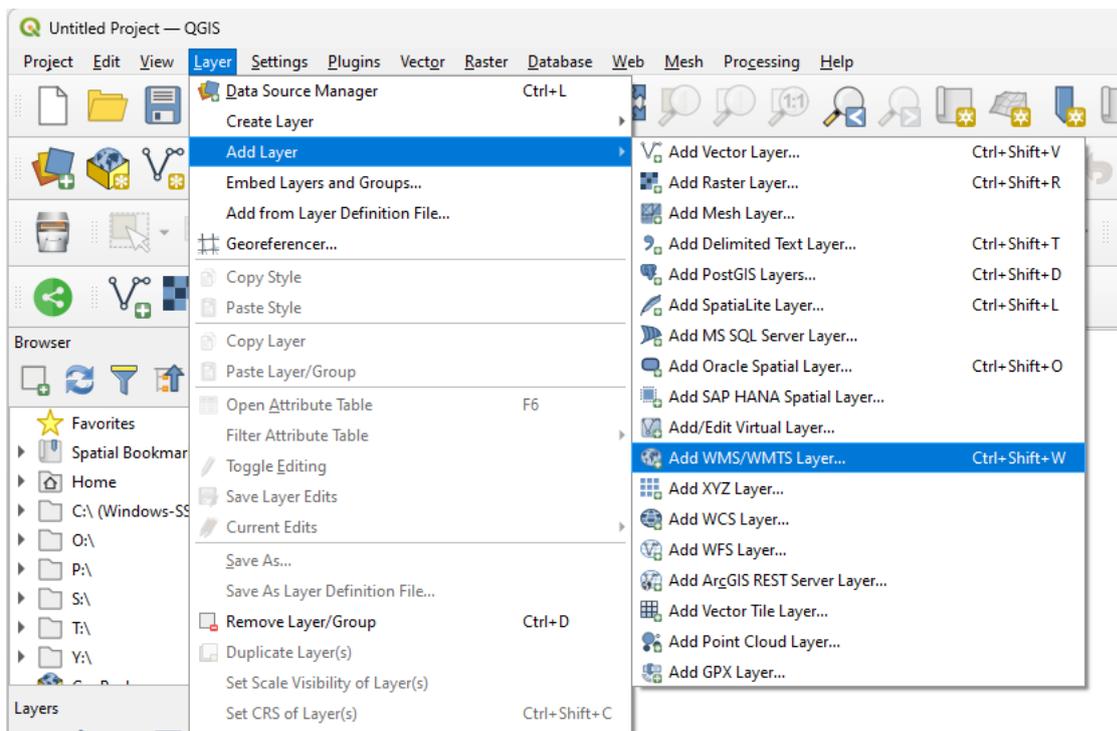
Note this URL could change but is correct at time of document creation. It is recommended to copy the link directly from the website to ensure it is up to date.

4. Viewing Open Data in QGIS

1. Open QGIS. If you do not have QGIS as an installed program, visit the website to [Download QGIS](#) and install. <https://www.qgis.org/en/site/>
2. If prompted, open a New Empty Project.

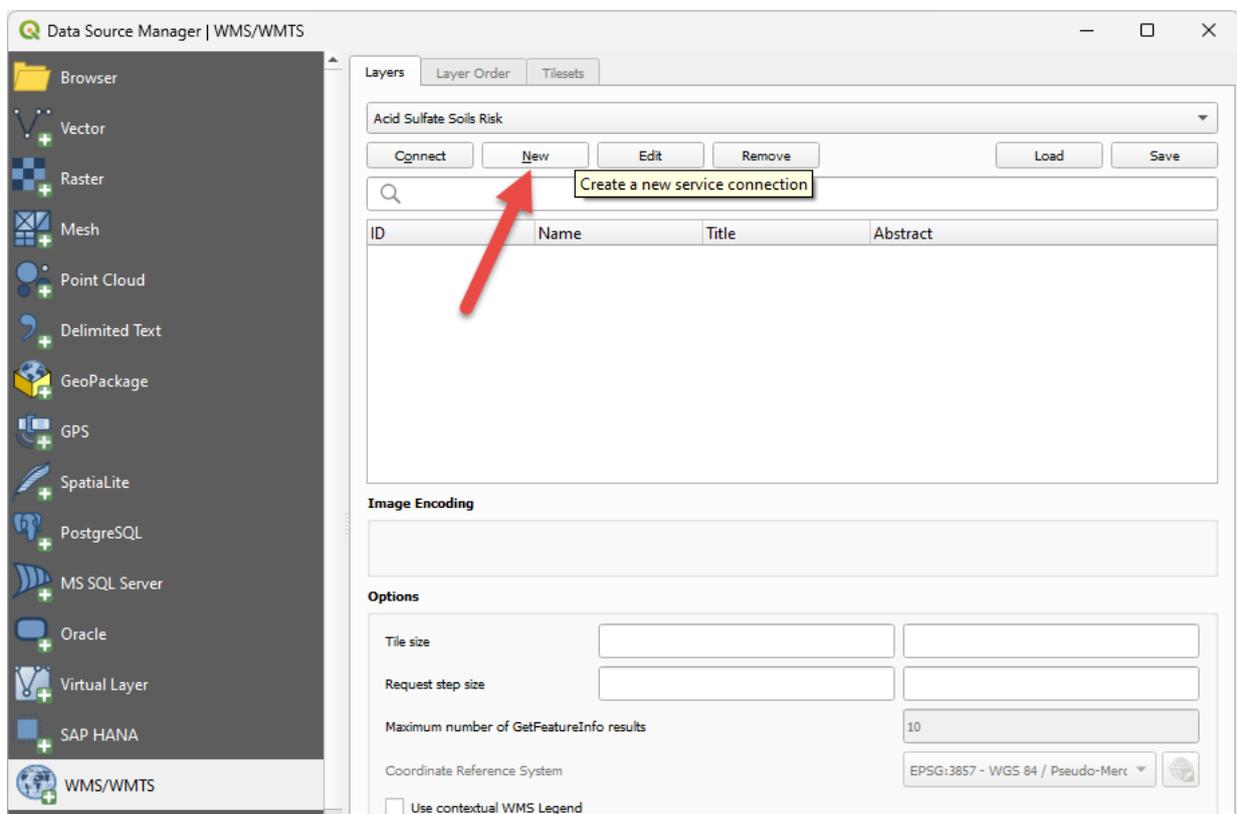


3. To add a layer in QGIS, you must know the data format. In the previous steps, a WMS was copied. To add this layer, select the 'Layer' menu, and under 'Add Layer' > 'Add WMS/WMTS Layer'.



This will open a new window called 'Data Source Manager | WMS/WMTS'.

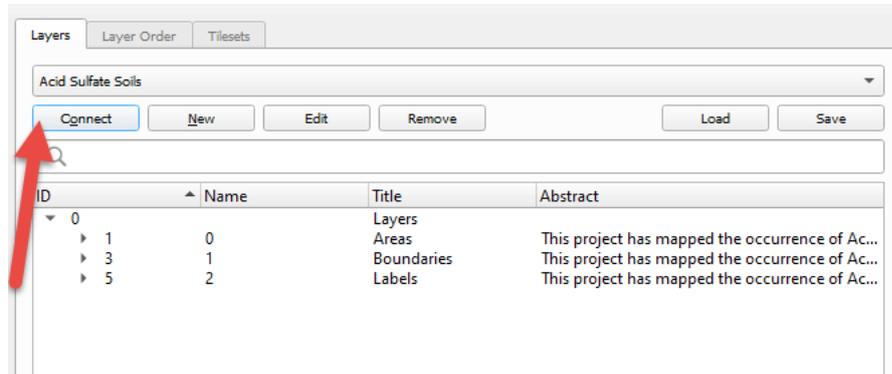
4. Select 'New' to open a new window for establishing a connection to the layer.



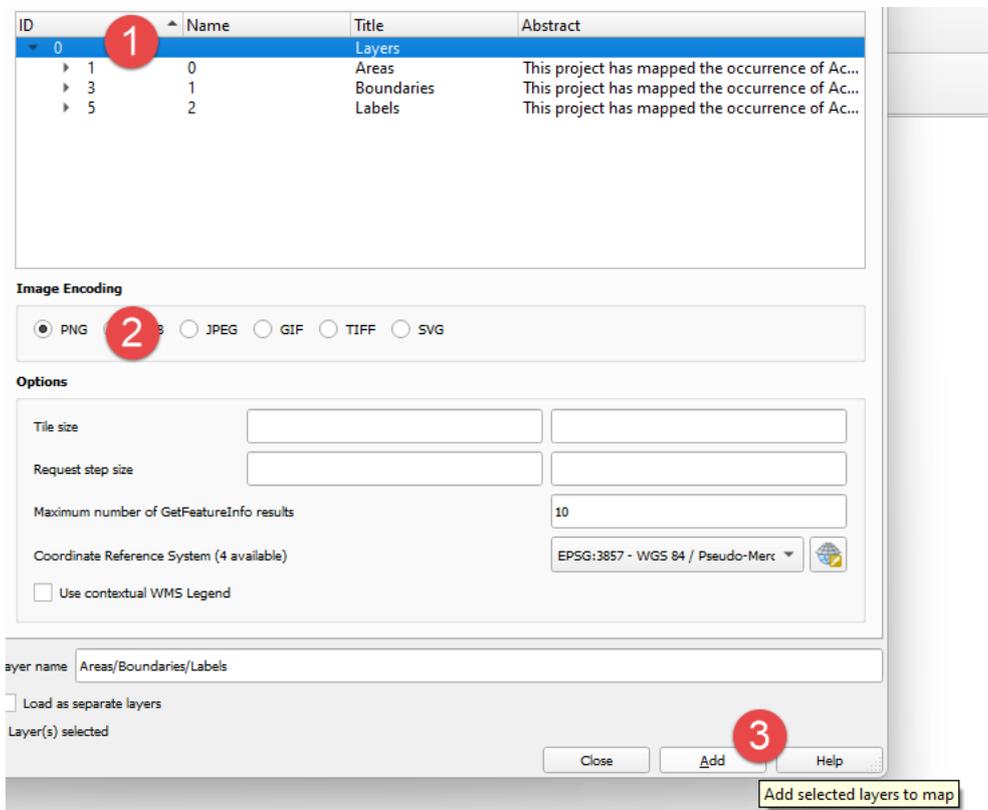
5. In the 'Create a New WMS/WMTS Connection' window, paste in the URL into the 'URL' box, and type in a name for the layer. Click OK.



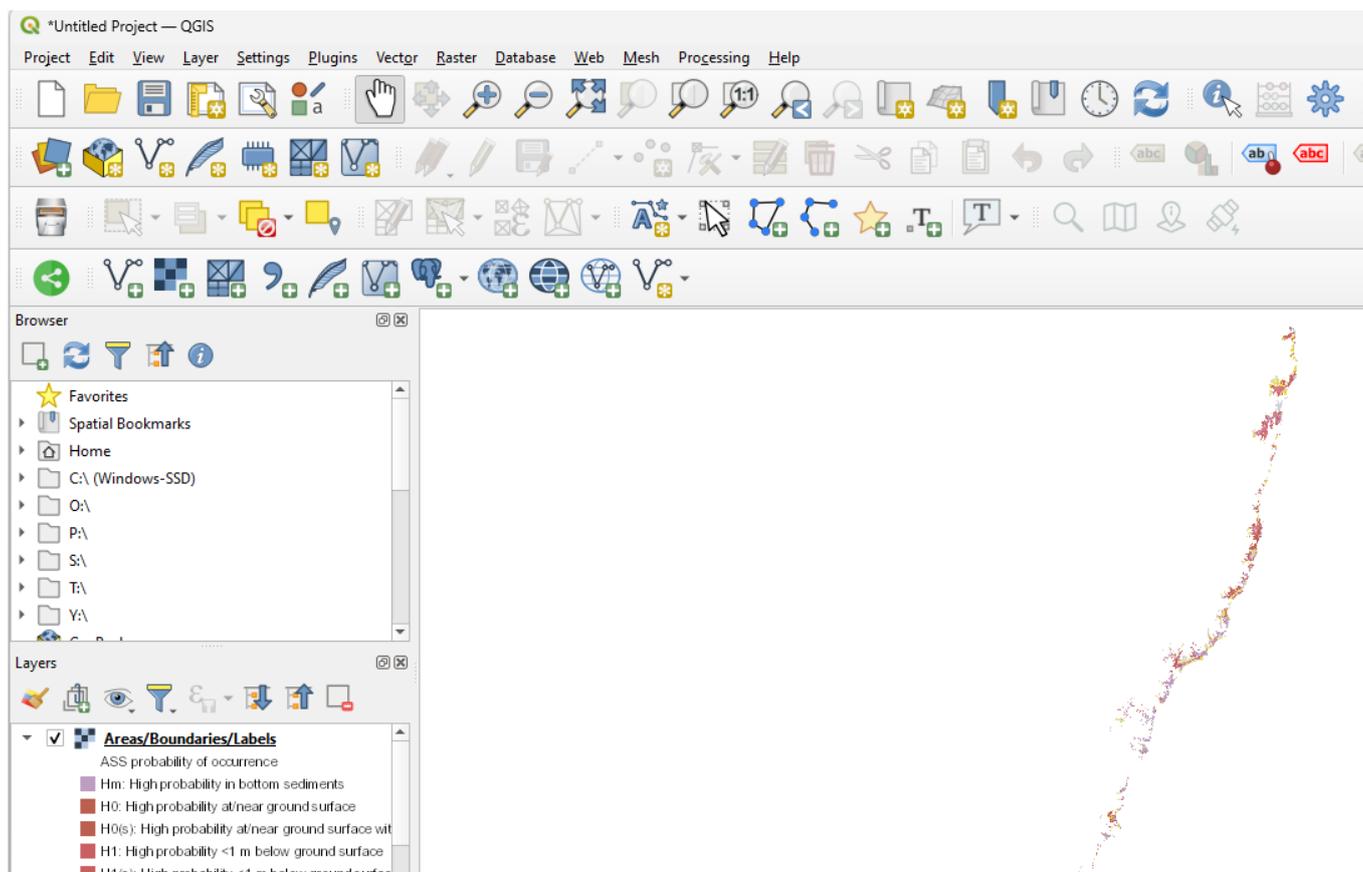
6. Then click on 'Connect'. This will establish a connection to the online web service layer.



7. Click on a layer from the list generated after connecting. If you wish to load all information onto the map interface, select the top layer (i.e. ID 0). Then select 'PNG' as the image encoding option and select 'Add' at the bottom of the screen.



- The layer has now been added to the map. Select 'Close' if the window is still open to view your layer on the map. Zoom in to view data and add more layers to provide more content.

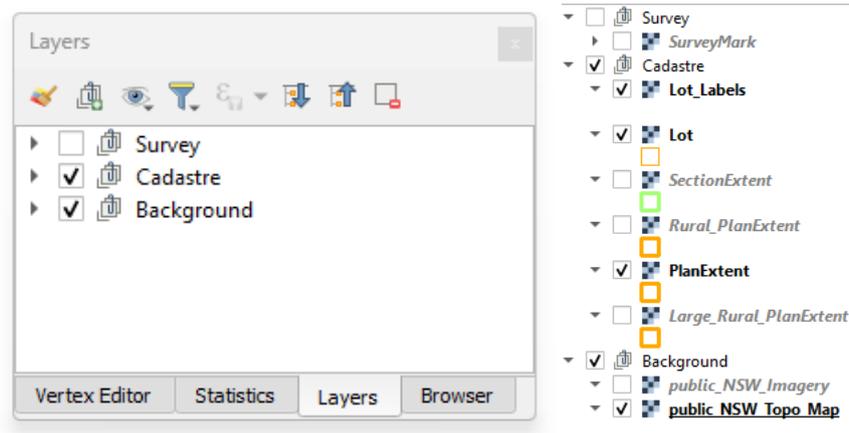


5. Loading Shared Files in QGIS

There are many ways to share geospatial open data in and between QGIS. Two common ways include sharing a QGIS project file (.qgz) or an XML file to load web services (.xml).

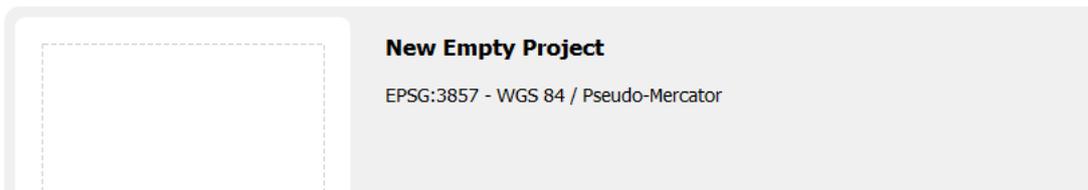
Using a QGIS Project File

- Open QGIS. If you do not have QGIS as an installed program, visit the website to Download QGIS. <https://www.qgis.org/en/site/>
- Install.
- Select 'Project' > 'Open', to open the provided .qgz file.
- View the map interface to access the data services shared in the QGIS project file. Explore the available layers by selectively enabling or disabling (ticket box) in the layers list panel.

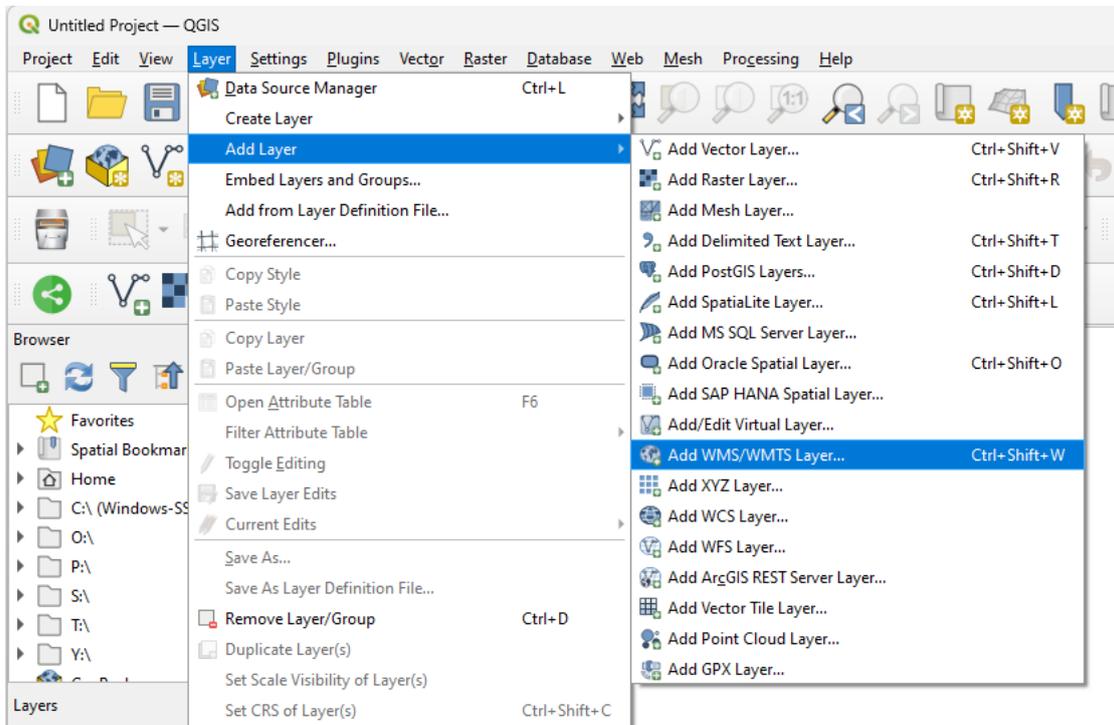


7. Loading an XML File of Web Services

1. Open QGIS. If you do not have QGIS as an installed program, visit the website to [Download QGIS](#) and install. If prompted, open a 'New Empty Project'.

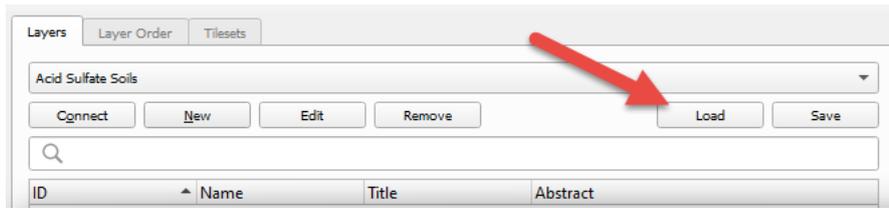


2. Select the 'Layer' menu and under 'Add Layer' > 'Add WMS/WMTS Layer'.

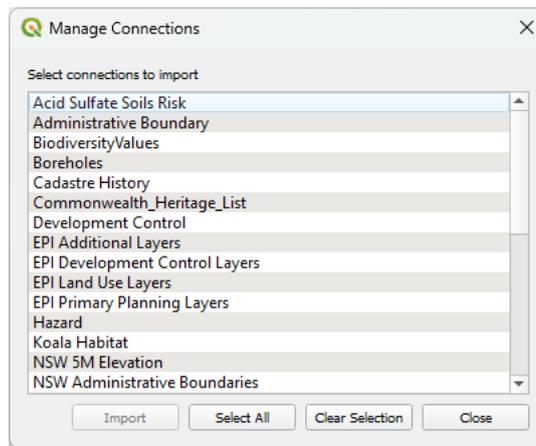


This will open a new window called 'Data Source Manager | WMS/WMTS'.

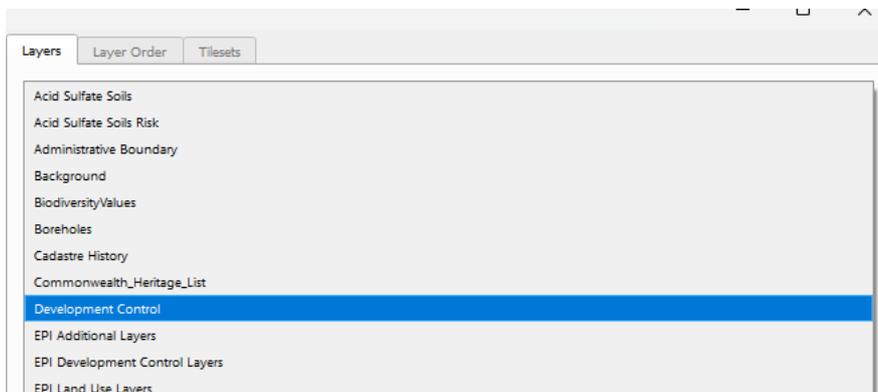
3. Select 'Load' to open a new window for loading in the XML file of web services.



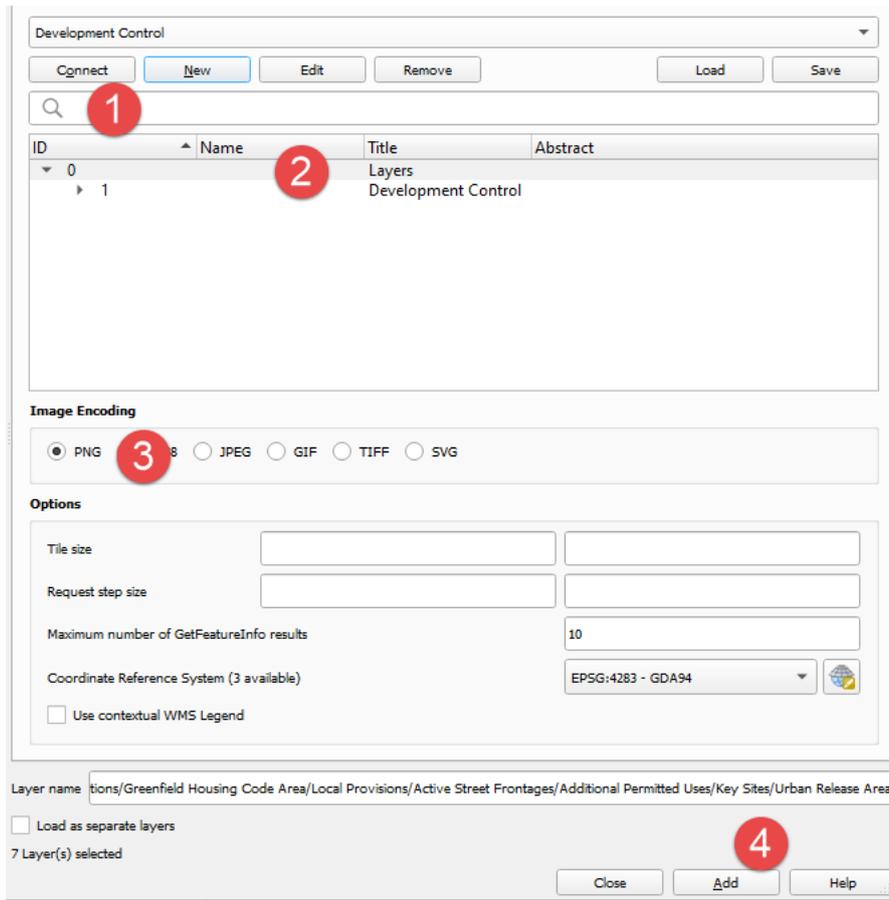
4. You will be prompted to select the web services from the file. If you wish to load all, please select 'Select All', and then 'Import'.



5. Select a loaded layer to display on the map by clicking on the drop down list of layers now available.



6. Once a layer is selected, click on 'Connect'. This will establish a connection to the online web service layer. Then click on a layer from the list generated after connecting. To load all information onto the map interface, select the top layer (ID 0). Then select 'PNG' as the image encoding option and select 'Add' at the bottom of the screen.



7. Your layer has now been added to the map. Select 'Close' if the window is still open to view your layer on the map. Zoom in to view data and add more layers to provide more content.



8. Appendix – About Open Data

Further Resources

- NSW Data Policy: <https://data.nsw.gov.au/data-policy>
- Open Data Handbook: <https://opendatahandbook.org/guide/en/what-is-open-data/>
- Open Data Institute: <https://www.theodi.org/topic/geospatial-data/>
- Open Data Course: <https://data.europa.eu/elearning/en/#/id/co-01>
- Report on the State of Open Data: <https://www.stateofopendata.od4d.net/>
- The Open Data Charter (<https://opendatacharter.net/>)
- OGC: Open Geospatial Consortium
 - royalty free, publicly available, open geospatial standards
 - <https://www.ogc.org/docs/is>
 - Best Practices Schema Repository
- The Australian government policy on Public Data
- GIS Guide to Public Domain: <https://www.esri.com/en-us/esri-press/browse/the-gis-guide-to-public-domain-data>
- Geoprivacy: <https://onlinelibrary.wiley.com/doi/abs/10.1111/tgis.12305>
- Check your dataset is FAIR with the handy self-assessment tool: <https://ardc.edu.au/resource/fair-data-self-assessment-tool/>
- Watch the FAIR data webinar playlist: https://www.youtube.com/playlist?list=PLG25fMbdLRa7oOMmUQruKud0__YNFc1c2
- Access free online FAIR data training and resources: <https://ardc.edu.au/resource/fair-data-training-resources/>