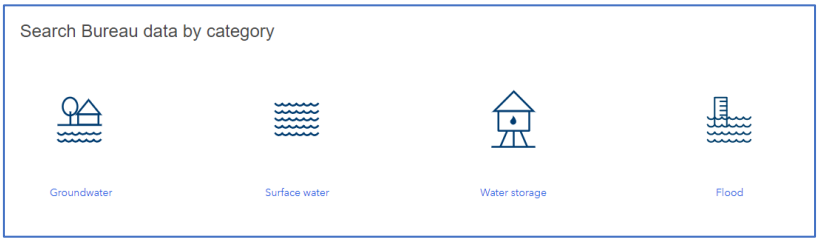
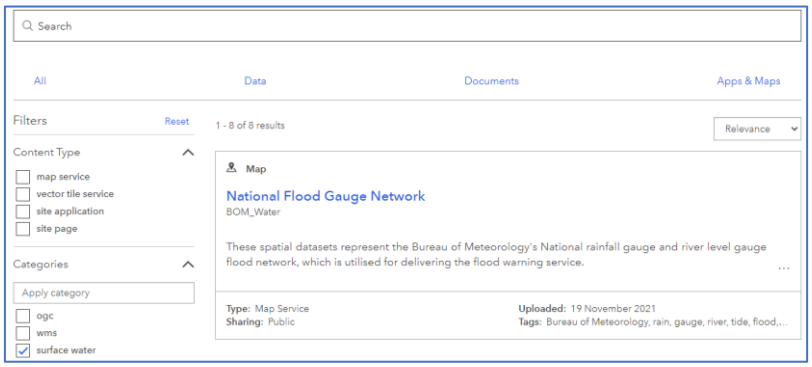
# National Flood Gauge Network (NFGN)

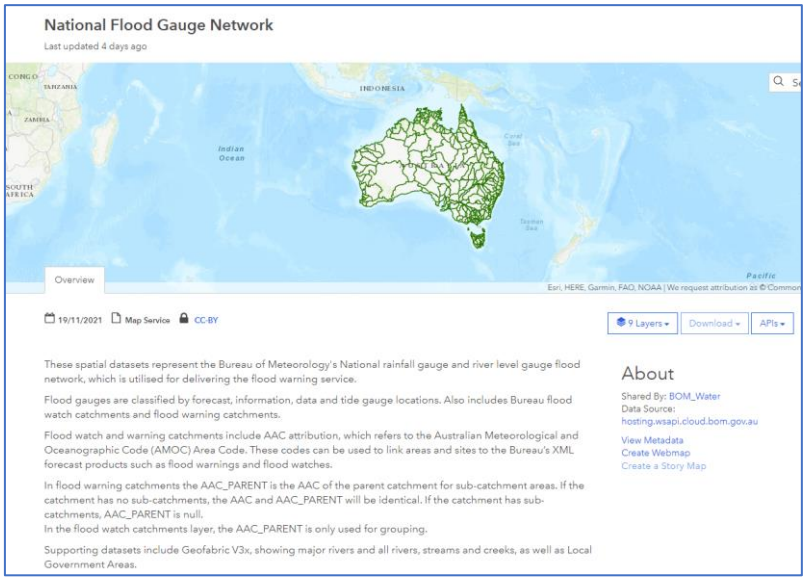
- Water Spatial API (WSAPI) is the new Bureau platform to deliver Water Applications and spatial datasets for Surface water, Groundwater, Water Storages and Flood via Web Maps and as Application Programming Interface (API's) via Australian Water Data Service (bom.gov.au)
- National Flood Gauge Network Webmap and spatial datasets via API are now available:
    - Click on Flood icon




    - Choose Map Service, Feature Service or Web Mapping Application
    - Click under Map icon > National Flood Gauge Network




    - National Flood Gauge Network National Flood Gauge Network | Australian Water Data Service (bom.gov.au)



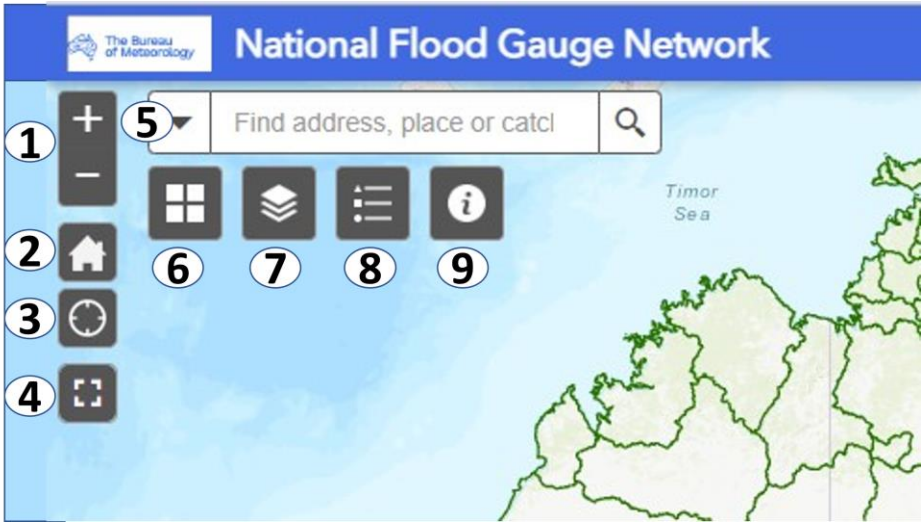

        - Under About > Click on "Create Webmap" which opens NFGN datasets as a Webmap in a new browser window - "My Map".
        - Use the interactive map functionality to view legend, attribute table, filter, search and print.

- Under API drop down box add in GIS systems full dataset as a OGC WMS or GeoService or GeoJSON
- Instructions on Usage of API are available at [Australian Water Data Service - AWDS-FAQ (bom.gov.au)]

## National Flood Gauge Network WebMap App

- The WebMap App is an extension of the existing NFGN WebMap and includes some more functionality such as the ability to export data as a CSV file.

### Basic Functions



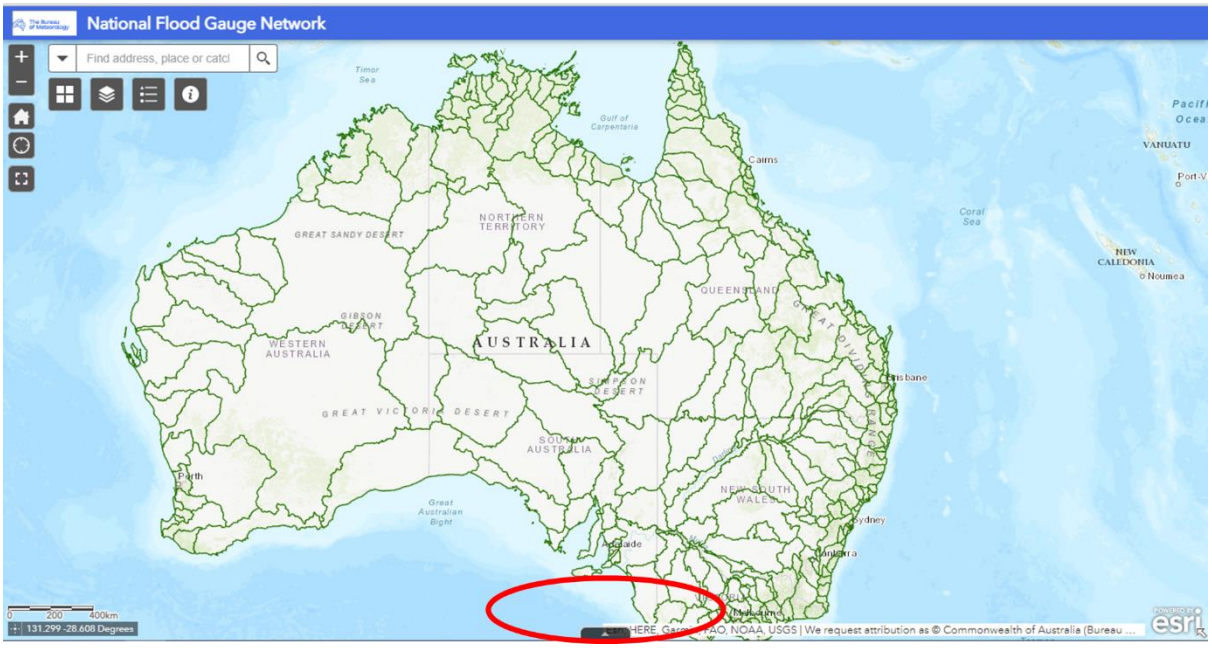

1. Zoom Slider: Zoom in and out
2. Home Button: Return to the default map extent
3. Location: View your location on the map
4. Fullscreen Mode
5. Search Bar: Search by place or locality name, flood watch catchment name, flood warning catchment name, Forecast location, Information location, Rain gauge location, River gauge location. Alternatively search by BOM Station Number, Station Name, Basin, Agency or Agency code
6. Basemap: Click on Basemap icon to select a Basemap of your choice.
7. Layers: Toggle Layers on/off
8. Legend
9. Information: This window has short description of product details, Link to How to use guide and email to Contact us for feedback.



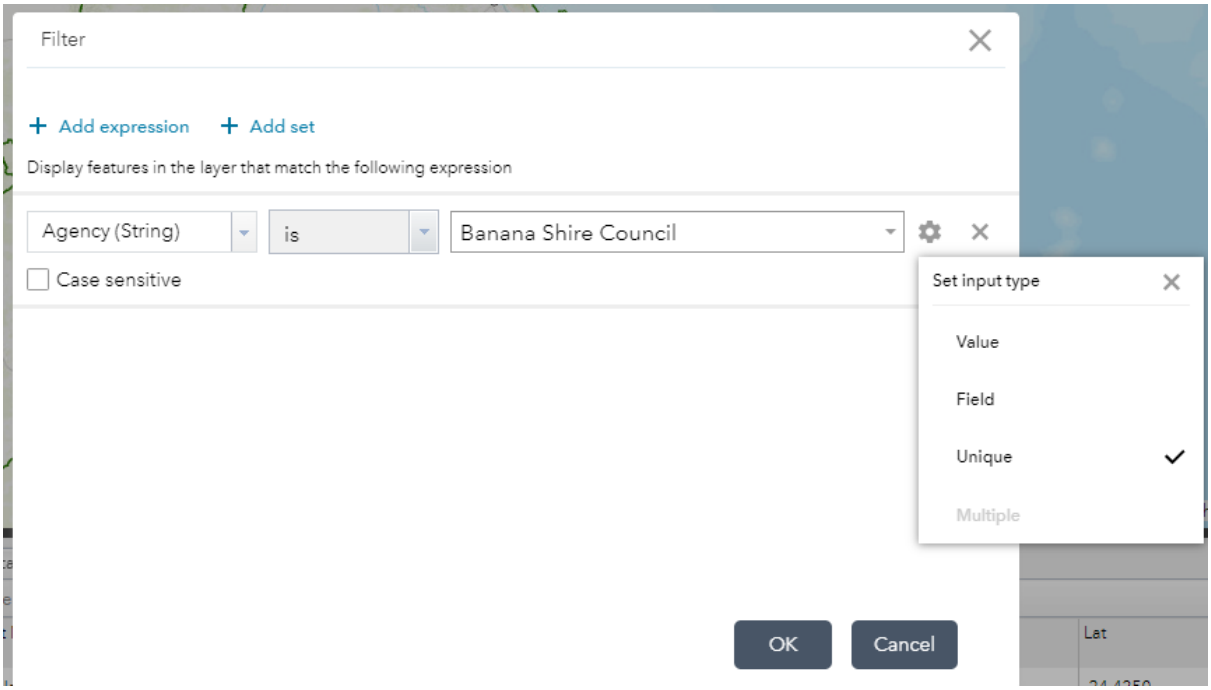
10. Scale Bar: Dynamic and changes with pre-set zoom levels in bottom left-hand corner of map view window.
11. Coordinates: Displays Latitude and Longitude coordinates in Degrees for cursor location in map window. Click on the star icon ( ) Click the map to get coordinates to enable clicking map to get coordinates > click on map for point location coordinates > click again to disable point location coordinates.
12. Map Overview window: A small white arrow on lower right-hand corner to show map overview.

## Attribute Table and Exporting to CSV

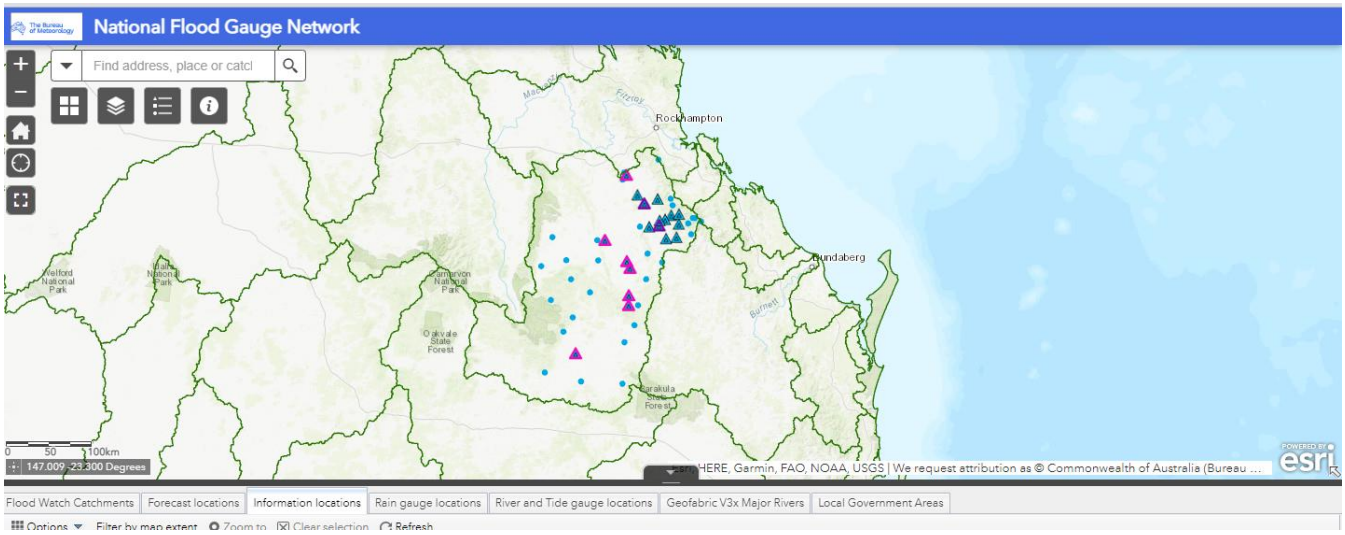
1. Open the attribute table by clicking the arrow down the bottom of the app interface



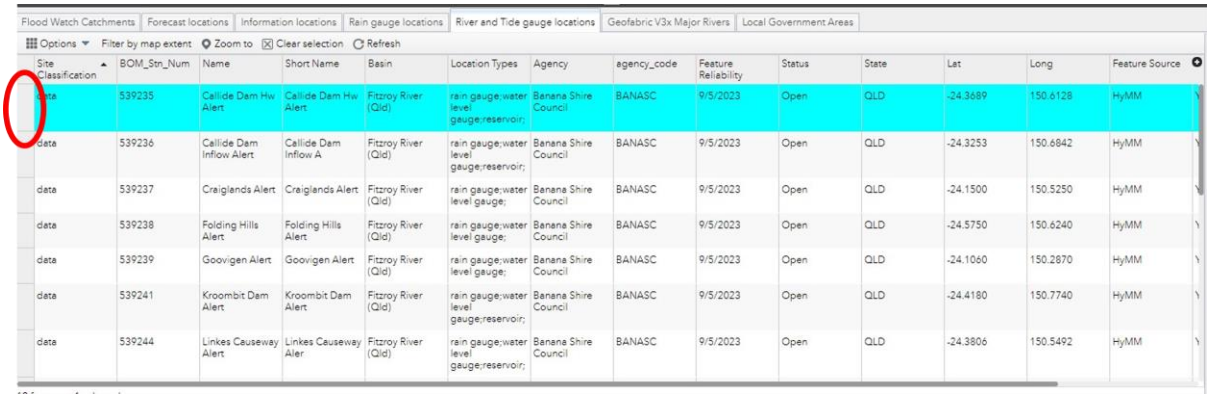

2. Apply filters to a relevant layer by clicking options→Filter
3. To return records only by a particular station owner set the field 'Agency' to 'is' and select the desired station owner(s) from the drop down. (screenshot below)
   Note: To return stations owned by multiple agencies change 'is' to 'is any of'
   Note: To get a drop down menu for agency click the settings cog and select 'Unique'




4. Note: To see these filters applied to the map (see below), the same filter must be applied across all four station layers (i.e., Forecast Locations, Information Locations, Rain Gauge Locations, River and Tide Gauge Locations) with layer symbologies.




5. To zoom into the returned records select the first record in the table (hit the leftmost panel), hold down the shift key and select the final record. Hit the 'Zoom To' Button.

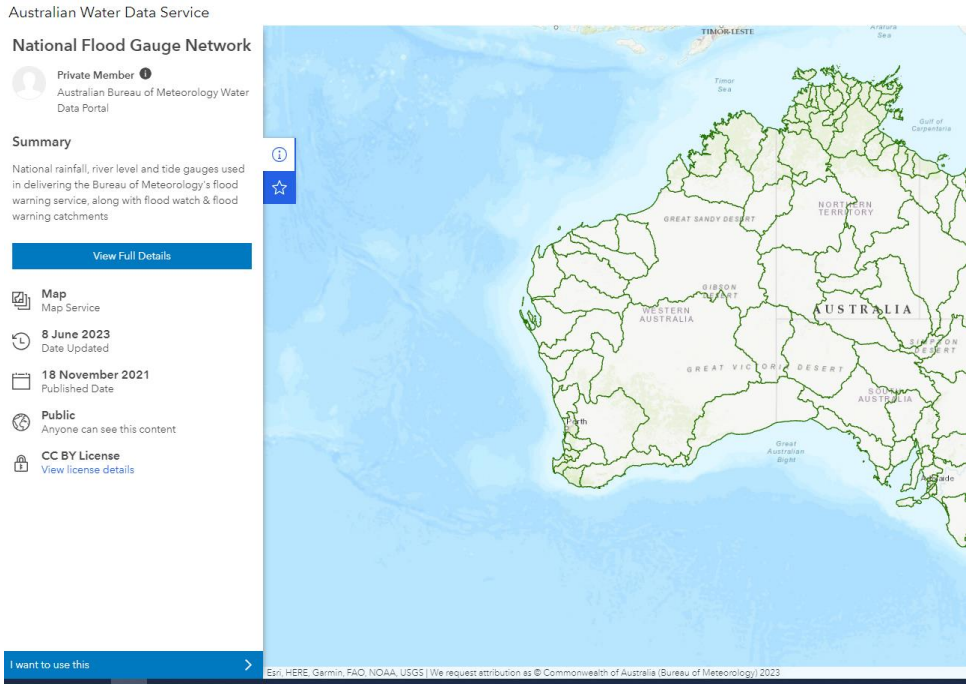


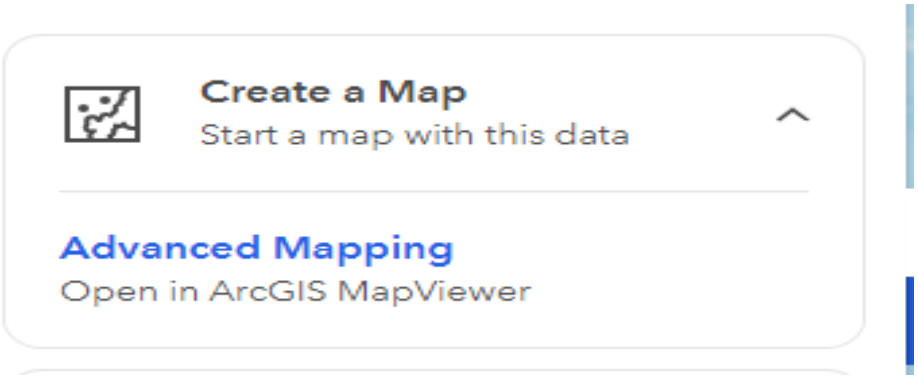

| Site Classification | BOM_Stn_Num | Name | Short Name | Basin | Location Types | Agency | agency_code | Feature Reliability | Status | State | Lat | Long | Feature Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| data | 539235 | Callide Dam Hw Alert | Callide Dam Hw Alert | Fitzroy River (Qld) | rain gauge;water level gauge;reservoir; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.3689 | 150.6128 | HyMM |
| data | 539236 | Callide Dam Inflow Alert | Callide Dam Inflow A | Fitzroy River (Qld) | rain gauge;water level gauge;reservoir; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.3253 | 150.6842 | HyMM |
| data | 539237 | Craiglands Alert | Craiglands Alert | Fitzroy River (Qld) | rain gauge;water level gauge; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.1500 | 150.5250 | HyMM |
| data | 539238 | Folding Hills Alert | Folding Hills Alert | Fitzroy River (Qld) | rain gauge;water level gauge; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.5750 | 150.6240 | HyMM |
| data | 539239 | Goovigen Alert | Goovigen Alert | Fitzroy River (Qld) | rain gauge;water level gauge; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.1060 | 150.2870 | HyMM |
| data | 539241 | Kroombit Dam Alert | Kroombit Dam Alert | Fitzroy River (Qld) | rain gauge;water level gauge;reservoir; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.4180 | 150.7740 | HyMM |
| data | 539244 | Linkes Causeway Alert | Linkes Causeway Aler | Fitzroy River (Qld) | rain gauge;water level gauge;reservoir; | Banana Shire Council | BANASC | 9/5/2023 | Open | QLD | -24.3806 | 150.5492 | HyMM |

6. To export the results to CSV, select options→export to CSV.
7. Save the downloaded csv to appropriate location.

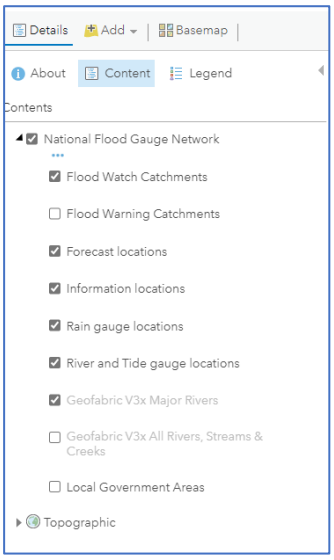
## Web Map Viewer functionality

- To Access the Web Map Viewer click “I want to use this”--> “Create a Map”-->Advanced Mapping



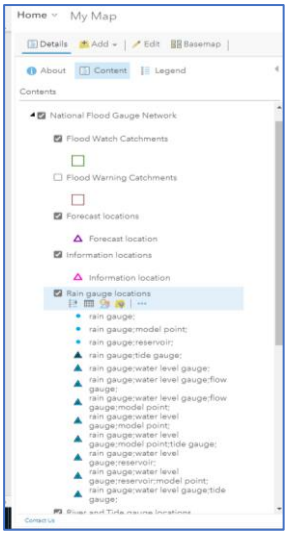



- **National Flood Gauge Network** Webmap displays the following spatial layers by default in the Contents panel




- **Home, zoom in or out icons:** For map default extent click Home icon. Use + or – buttons to zoom in our out. The mouse scroll button can be also used to zoom in or zoom out in map view window. **Pan** around the Map view by holding down the left or right mouse button.

- **Legend** tab expands layer symbology classified based on feature attributes in map viewer:

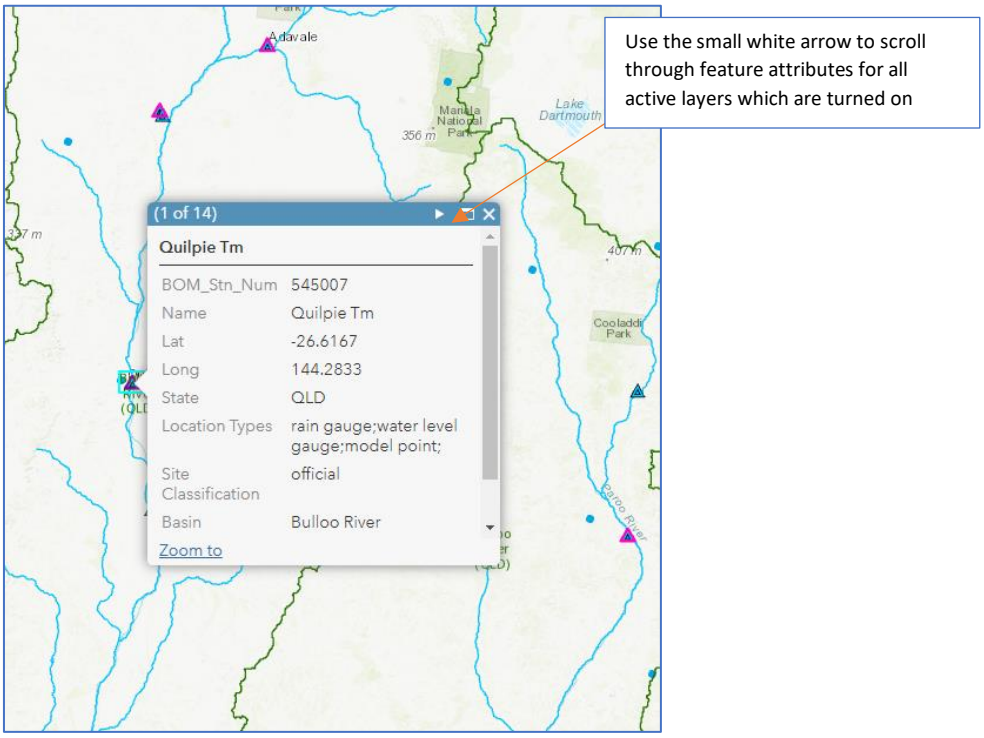



- **Spatial layer** settings for feature symbology and labels are:
    - **Flood Watch Catchments** - Flood Watch Catchments polygons across Australia. Labels for flood watch catchment name will automatically appear when map scale is 1:2,000,000.
    - **Flood Warning Catchments** - Flood Warnings catchment polygons where flood warning service is provided. Labels for flood warning catchment name will automatically appear when map scale is 1:2,000,000.
    - **Forecast locations** – River gauge locations which are classified as official forecast location. Click on layer in contents panel and then click on Table icon to open feature attributes as a table. Symbology will automatically appear when map scale is 1:17,000,000. Labels for forecast gauge location name will automatically appear when map scale is 1:800,000.
    - **Information locations** – River gauge locations which are classified as information location. Click on layer in contents panel and then click on Table icon to open feature attributes as a table. Symbology will appear automatically when map scale is 1:17,000,000. Labels for information gauge location name will automatically appear when map scale is 1:800,000.
    - **Rain gauge locations** – Rain gauges stand-alone locations; co-located Rain gauges at river level and tide gauge locations. Click on layer in contents panel and then click on Table icon to open feature attributes as a table Symbology will automatically appear when map scale is 1:5,000,000. Labels for rain gauge location name will automatically appear at when map scale is 1:500,000.
    - **River and Tide gauge locations** – River and tide gauges stand-alone locations; co-located River level and tide gauges. Click on layer in contents panel and then click on Table icon to open feature attributes as a table Symbology will automatically appear at when map scale is 1:5,000,000. Labels for river and tide gauge location name will automatically appear when map scale is 1:500,000.
    - **Geofabric v3.x_Major Rivers** – Updated National River network derived from 1 sec (30m grid resolution) Digital Elevation Model. Click on layer in contents panel and then click on Table icon to open feature attributes as a table. Symbology will automatically appear when map scale is 1:2,000,000. Labels for rivers, streams and creeks will automatically appear when map scale is 1:500,000.
    - **Geofabric v3.x_All_Rivers_Streams_Creeks** – As the dataset is large and takes time to load from server the layer is set to be available in map viewer when map scale is

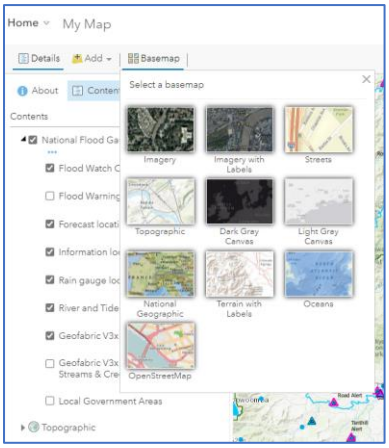
1:2,000,000. Updated National River network derived from 1 sec (30m grid resolution) Digital Elevation Model. As this dataset is very large and has all rivers, streams and creeks symbology will automatically appear when map scale is 1:2,000,000. Labels for rivers, streams and creeks will automatically appear when map scale is 1:500,000.

- **Local Government Areas -** Local Government Area (LGA) polygons across Australia. Labels for LGA name will automatically appear when map scale is 1:2,000,000. LGA boundaries at a national scale downloaded from Geoscape website
- **Topographic** – ESRI Basemap layer showing global Topographic hill shading, major administrative and physical features.

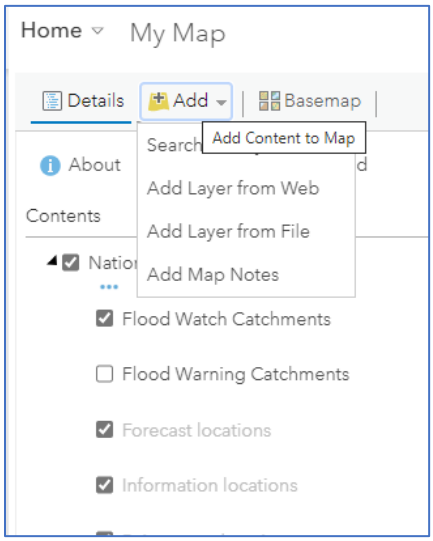
- **Feature Attribute Popup window**
  - Click on a feature symbology in map viewer window to get metadata of active layers in a pop-up window by scrolling through arrow icon on top right-hand corner of pop-up window.



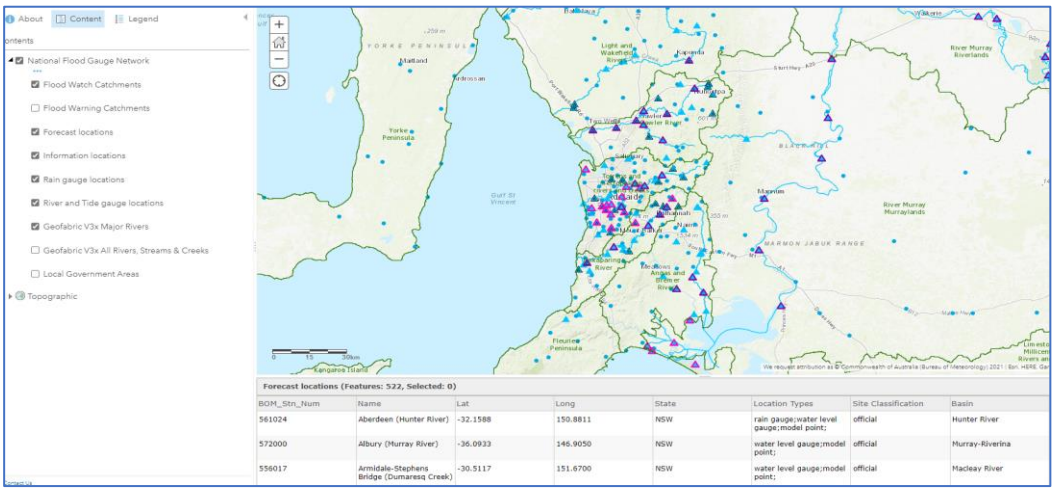

- **Basemap**
- Click on the Basemap icon to select a Basemap of your choice.




- **Add** for adding content to Map. This functionality allows to:
    - Search and Add for Layers already published on AWDS portal
    - Add Layer from Web
    - Add Layer from File
    - Add Map Notes

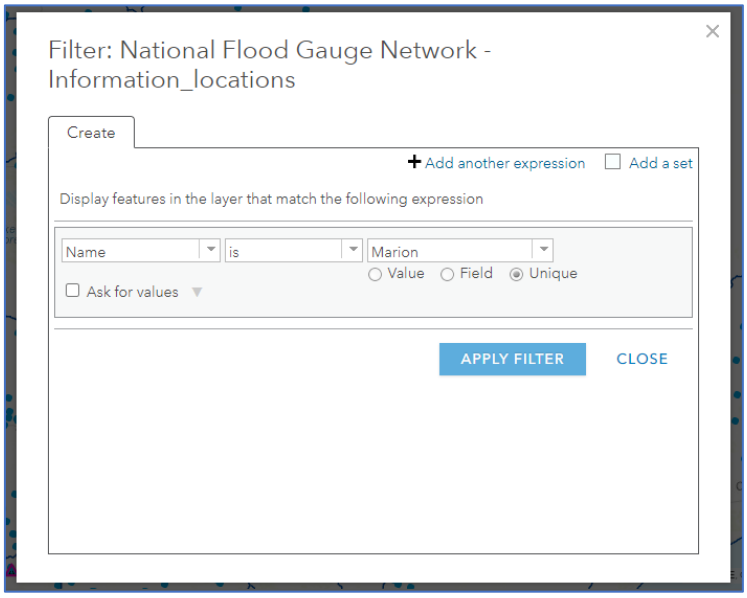



- **Attribute Table**: Click on a Layer in Table of Contents and then Table icon to open feature attributes in a table.



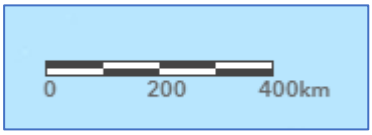

- **Filter features**: Click on Filter icon under each layer in Table of Content. This is used to create a query for selection in table and display in map view. Use the drop arrows to create your expression and hit APPLY FILTER. You can click on + Add another expression to have

multiple queries on the layer for your selection. Also, you can add another set of queries from another layer by ticking the Add a set box.

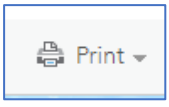



- **Map Overview window**: A small white arrow on top right-hand corner to show map overview.


- **Scale Bar:** Dynamic and changes with pre-set zoom levels in bottom left-hand corner of map view window.



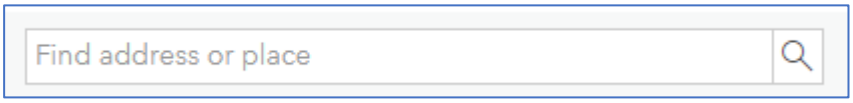

- **Print icon**: For printing your selected Map view




  - Map printing is available as Map Only and at A4 and A3 Paper sizes in Portrait and Landscape format.
  - Save your map as an image (png format) by right clicking mouse button on map image.

- **Search tool**: Use this functionality to search by location name or river name.

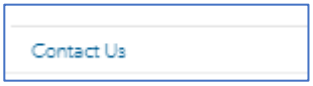
- Please choose your search results carefully for within Australian region as search database is global.




- **Measure tool**: Area or Distance tool


  - The Measure tool in ArcGIS Online uses the Geodesic method, which takes into account the curvature of the earth to create accurate measurements. Note:
  - Geodesic measures the shortest line between any two points on the earth's surface based on a spheroid (ellipsoid).
  - Distortions are expected when measuring distances or areas in higher latitudes when (by default ArcGIS in Online) maps are projected in the Web Mercator coordinate system. However, measurements are relatively accurate when using the Measure tool in ArcGIS Online because the tool uses a method that honors the ellipsoid of the coordinate system of the basemap.
  - Source: [FAQ: What method does the Measure tool in the ArcGIS Online map viewer use to create measurements? (esri.com)]

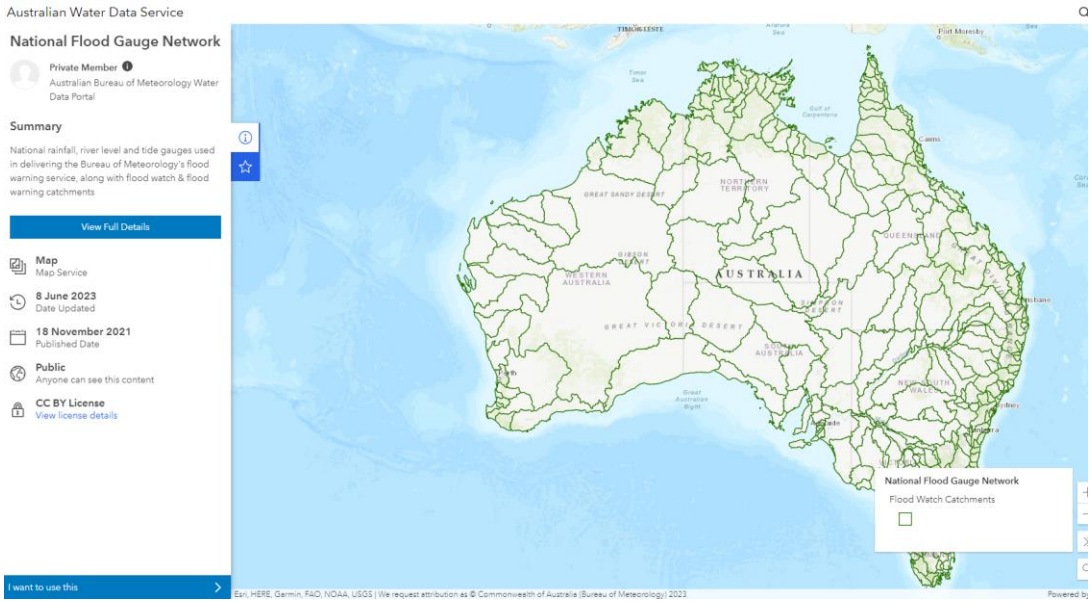
- **Provide feedback and suggestions** by clicking on "Contact Us" icon available in lower left-hand corner in Map viewer window water@bom.gov.au




## Using API in ArcGIS Pro

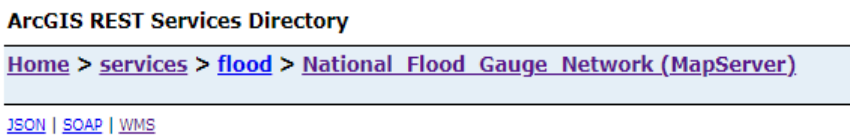
To use these spatial layers in ArcGIS Pro GIS software

- From the NFGN Map in AWDS click “I want to use this” --> ”Open in ArcGIS Enterprise”

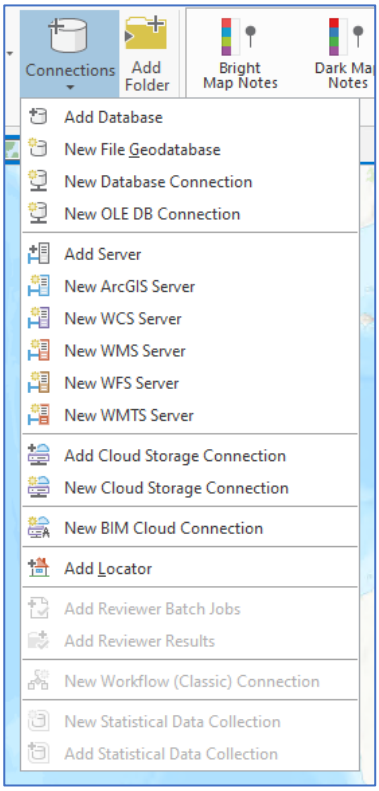


- Scroll to the bottom of the page and click the  to copy to the clipboard

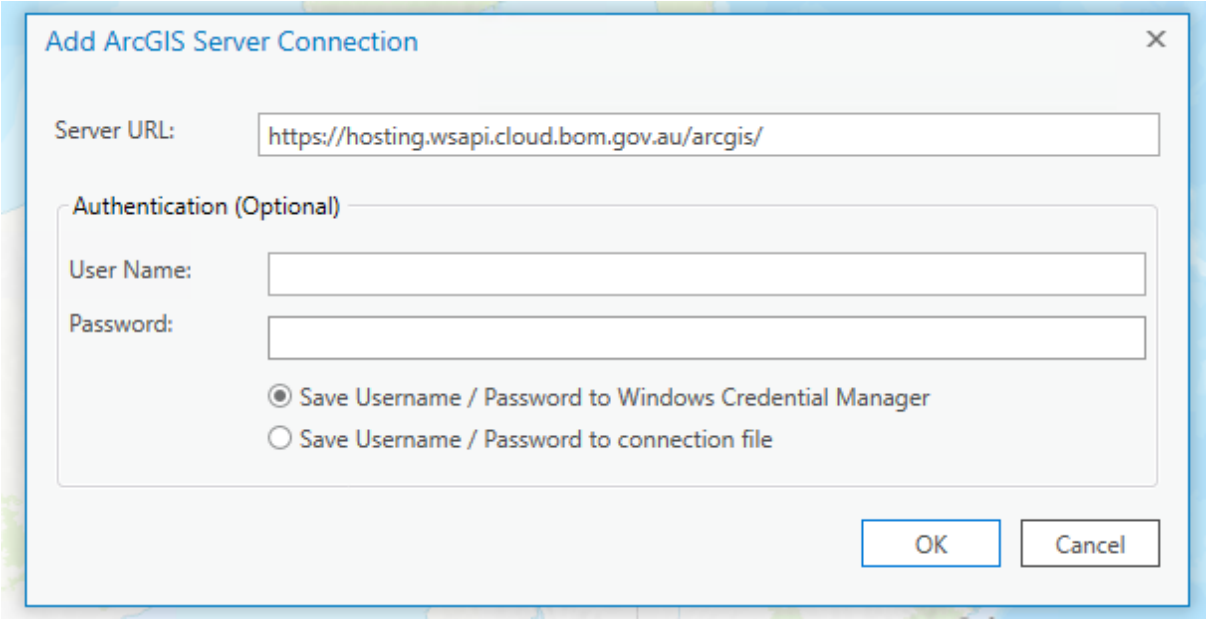

  - Note click the “View”  button to access OGC Services
  - Right click and copy the “WMS” Url on the resulting page (ONLY if wanting OGC services)



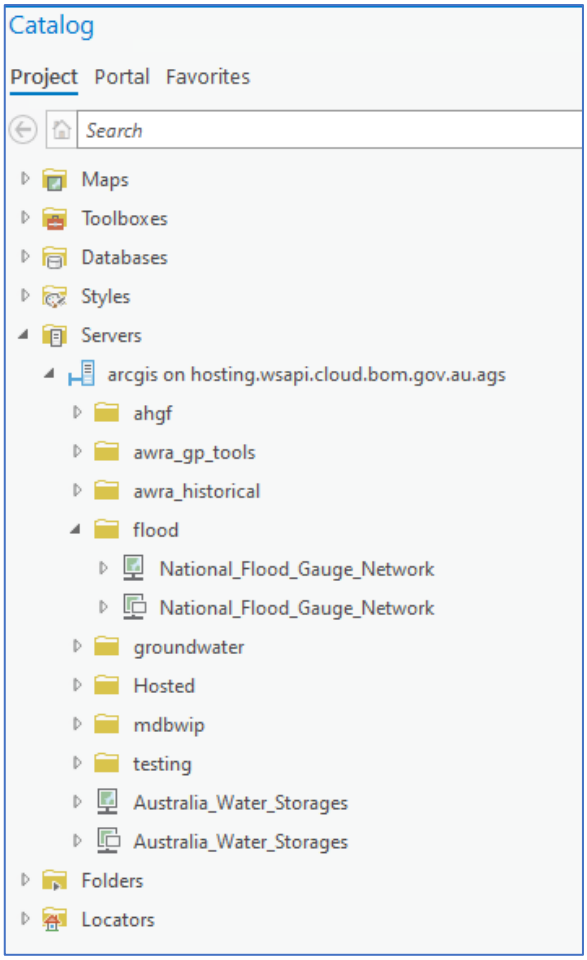

- Open ArcGIS Pro
- Under Insert tab in Ribbon > Click on Add Connections icon on Ribbon > Click on New ArcGIS Server (Or alternatively, WMS Server if the WMS link is being utilised)



- Paste the copied GeoService URL and delete the query text as shown in screen shot below




- Click on Cancel when Sign in box popup window comes
- In Catalog window the new connection to server is added.
- Add the National_Flood_Gauge_Network Map Service or Feature Service in Table of Contents in ArcGIS Pro


Catalog
Project
Portal
Favorites
Search
Maps
Toolboxes
Databases
Styles
Servers
arcgis on hosting.wsapi.cloud.bom.gov.au.ags
ahgf
awra_gp_tools
awra_historical
flood
National_Flood_Gauge_Network
National_Flood_Gauge_Network
groundwater
Hosted
mdbwip
testing
Australia_Water_Storages
Australia_Water_Storages
Folders
Locators