



Spatial NI

ArcGIS Online Services

ArcMap 10.6.1

Document Version

Version	Purpose for Change	Date
1.0	Creation	01 April 2019

Software Version

The guidance in this document has been written for use with ArcMap 10.6.1



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About This Guide

This guide has been written to assist you when using web services from the Spatial NI ArcGIS Online (AGOL) in ArcGIS Pro.

Text highlighted in **bold** are actions that you will need to complete.

When you see this box...

Go Further Box:

Discover more amazing ways you can use the Spatial NI services, OR Top tips for using ArcGIS Pro.



What is Spatial NI?

Spatial NI is Ordnance Survey of Northern Ireland's web mapping platform. It provides you with access to not only Ordnance Survey's authoritative mapping data, but other geospatial information from multiple providers across the public and private sectors.

Components of Spatial NI:



Spatial NI Website

The Spatial NI website enables the public citizen to view and interrogate OSNI maps with other spatial data. It also contains a handy gallery of other mapping applications.



Spatial NI NIMA Portal

Access the Spatial Data Infrastructure (SDI) available to all recipients of the Northern Ireland Mapping Agreement (NIMA) - (Login is required).



Spatial NI for INSPIRE

Spatial NI for INSPIRE provides a network of spatial data, accessible under the INSPIRE Directive, that can be used to promote and support environmental protection

What is ArcGIS Online?

ArcGIS Online is a component of the Esri platform and is part of their geospatial cloud. It enables you to connect people, locations and data using interactive maps. You can work with smart, data driven styles, intuitive analysis tools that deliver location based intelligence and share your insights with the world or specific groups.

Who can gain Access to Spatial NI Content via AGOL?

Access to the Spatial NI content via AGOL is available to all NIMA participants who are unable to connect to the Spatial NI NIMA Portal.

How to gain Access to the Spatial NI AGOL?

You will need to have an AGOL account for your organisation and have access to administrative privileges. The data is exchanged via a group established on the Spatial NI AGOL, which is then shared with specific members of your organisation.

If after reading this document you would like to know more on how to configure this access, [email us](#) for advice.

What is ArcMap?

Arcmap was Esri's desktop GIS product that provided the ability to complete professional 2D and 3D mapping and analysis. It was initially released in 1999 with the current version (10.6.1) being made available in July 2018. ArcMap has been replaced by ArcGIS Pro (released in 2015) as Esri's main desktop GIS product.

New to using ArcMap?

Complete [Esri's online training](#) to find out how you can make the most of ArcMap.

Accessing Spatial NI Services

Spatial NI contains a wealth of geospatial data from a diverse range of organisations. This information can be easily leveraged within ArcMap to help you complete analysis, identify trends and make informed decisions.

Spatial NI has facilitated two methods by which you can easily leverage content into ArcGIS Pro.

These are:

- Spatial NI NIMA Portal – A high availability instance of ArcGIS Enterprise which offers you a single sign-on experience. This is facilitated by using Active Directory Federated Service (ADFS).
- ArcGIS Online (AGOL) – Easily access content via your own organisations AGOL account. You will need to have a level 2 named user within your organisation to connect via this method.

Connecting to Spatial NI via ArcGIS Online (AGOL)

To connect to and leverage content from Spatial NI via ArcGIS Online, you will need to have a configured level 1 or a level 2 named user account within your organisations AGOL.

Your AGOL credentials

Your AGOL named user account will need to have certain privileges configured. To check this you may need to consult with your organisations AGOL administrator.

A user for connection to Spatial NI must have the following configuration:

Role: **User (default)**

New member

First name

Test

Last name

User

Email address

tech.spatialni@finance-ni.gov.uk

Username

TestUser1230

User type

Creator (formerly Level 2)

114 available

Compatible with all roles and licenses

Role

User

Temporary password

Role privileges: Join external groups

Role privileges


[Import settings from an existing role or template](#)
[Toggle all on](#)
[Collapse all](#)

General Privileges

Members	Groups	Content
<input type="checkbox"/> View	<input type="checkbox"/> Create, update, and delete <input type="checkbox"/> Join organizational groups <input checked="" type="checkbox"/> Join external groups <input type="checkbox"/> View groups shared with organization	<input type="checkbox"/> Create, update, and delete <input type="checkbox"/> Publish hosted feature layers <input type="checkbox"/> Publish hosted tile layers <input type="checkbox"/> Publish hosted scene layers <input type="checkbox"/> View content shared with organization
Sharing	Premium Content	Features
<input type="checkbox"/> Share with groups <input type="checkbox"/> Share with organization <input type="checkbox"/> Share with public <input type="checkbox"/> Make groups visible to organization <input type="checkbox"/> Make groups visible to public <input type="checkbox"/> Make groups available to Open Data	<input type="checkbox"/> Geocoding <input type="checkbox"/> Network Analysis <input type="checkbox"/> Spatial Analysis <input type="checkbox"/> GeoEnrichment <input type="checkbox"/> Demographics <input type="checkbox"/> Elevation Analysis	<input type="checkbox"/> Edit <input type="checkbox"/> Edit with full control
Open Data		
<input type="checkbox"/> Manage Open Data site(s)		

Who can see your profile?: Everyone

Test 's Profile



Click thumbnail to change image.

First Name

Last Name

New Email

Confirm Email

Username

TestUser1230

Who can see your profile?

☒ Everyone (public)
 ☐ Organization
 ☐ Private

Language

English - English

Number and date format

US - US

Region

United Kingdom

Units

Metric

Getting access to Spatial NI

Once you have checked that your AGOL account has the correct permissions, you will need to select which Spatial NI groups you would like to access from the list below:

Group Name	Description	Want to Join?	
Environment	Contains current and historical environment feature layers, incl. NI designated sites.	✓	✗
Geology	Contains map image layers showing features of NI Geology.	✓	✗
Hydrology	Contains map image layers showing water distribution and flooding data.	✓	✗
OSNI: Elevation	Contains OSNI Terrain data.	✓	✗
OSNI: Historical	Contains historical line drawn and early digital maps of NI throughout the 20 th century.	✓	✗
OSNI: Fusion	Contains dynamic feature layers derived from the OSNI Fusion basemap.	✓	✗
OSNI: Imagery	Contains the current orthophotography mosaic and the individual imagery captured by year.	✓	✗
OSNI: Location	Contains pointer services, address information and boundaries for NI.	✓	✗
OSNI: Opendata	Contains the opendata offered by OSNI, including: boundaries, raster basemaps and transport network.	✓	✗
People and Place	Contains data for social interest including: schools playparks, police stations and public areas.	✓	✗
Statistics	Contains statistical data from the NI 2011 census and deprivation maps.	✓	✗

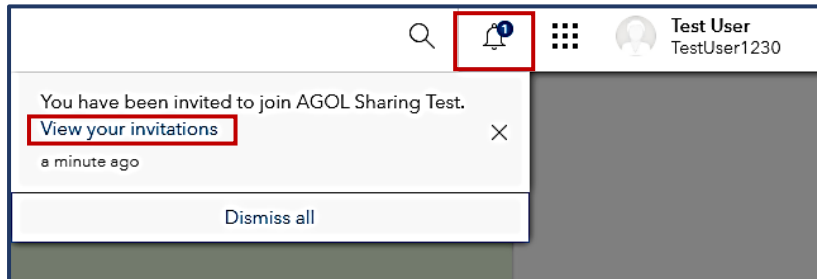
Then contact the Spatial NI Support Team by email, providing the following details to be granted access to the correct groups.

- Your AGOL username
- The list of groups which you would like to access

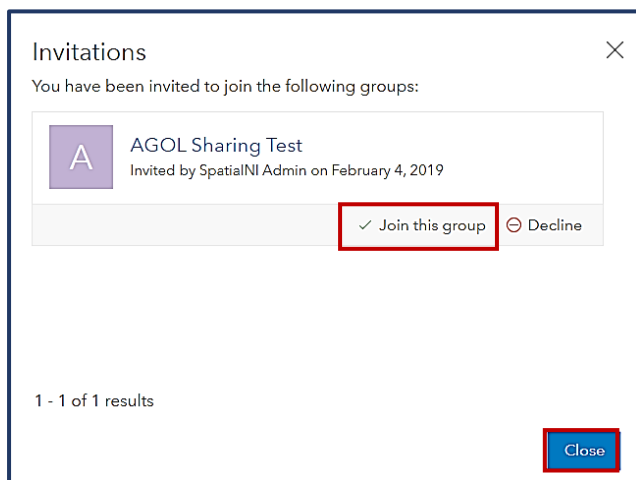
Accepting a request notification

Once, the Spatial NI support team have confirmed your access permissions, you will need to accept the group invitation to join the group.

1. Login to your organisations AGOL.
2. Click the **notifications icon** on the top menu bar → **View your invitations**



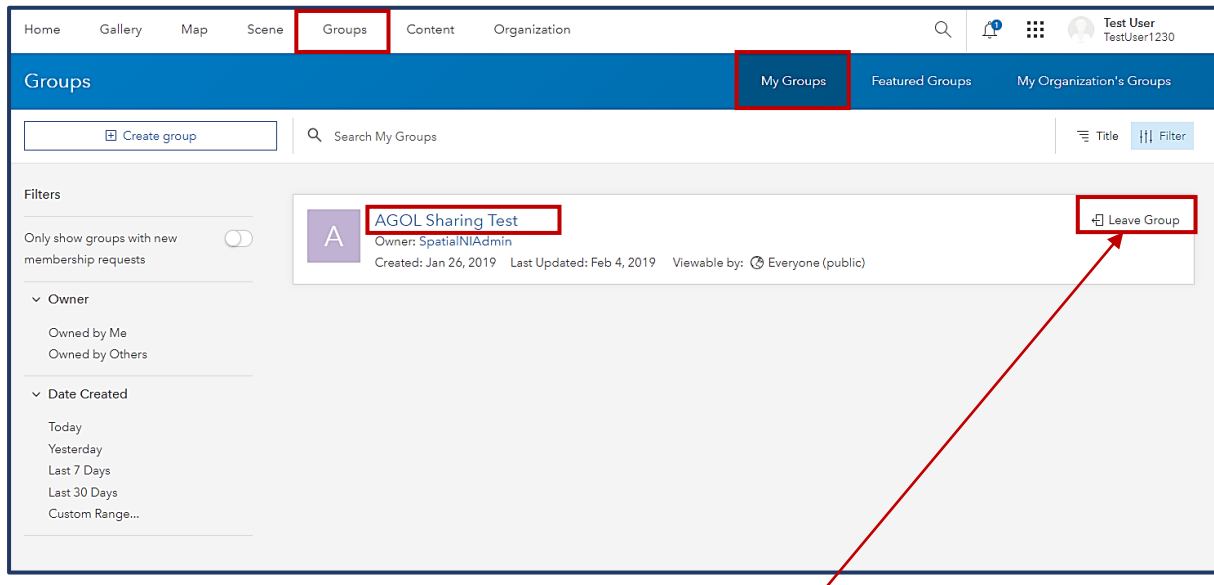
3. From the list of invitations, select the AGOL group you wish to join → Click **Join this group**



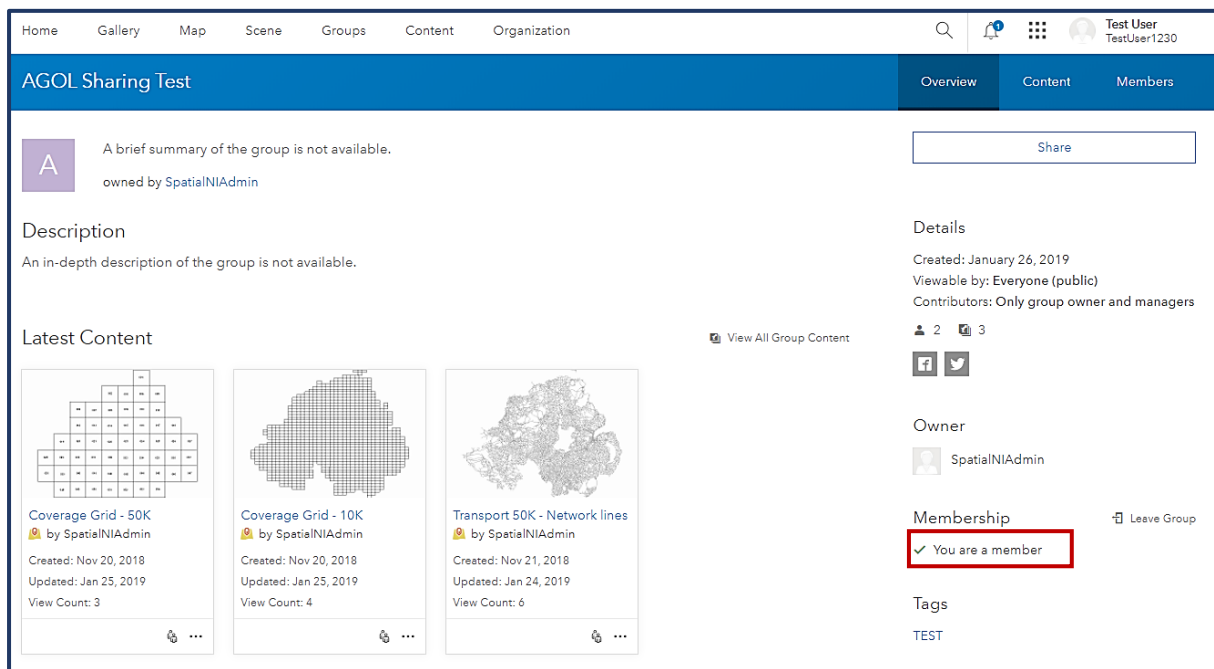
Accessing a group

The group will now appear in your **My Groups** tab, within **Groups**.

1. Click the **group name link** to enter the group page, and view content.



***NOTE:** Click **Leave Group** at any time you wish to remove yourself from the group. This will have no effect on the group or content within.



Finding and Viewing Content

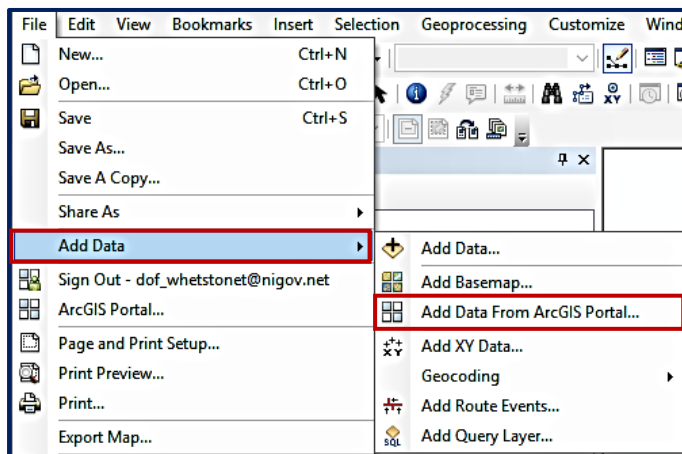
Spatial NI provides OSNI and third party organisations data via AGOL shared groups. It is also possible to gain access to Spatial NI basemaps upon request.

Adding data from the Spatial NI NIMA Portal to your Map

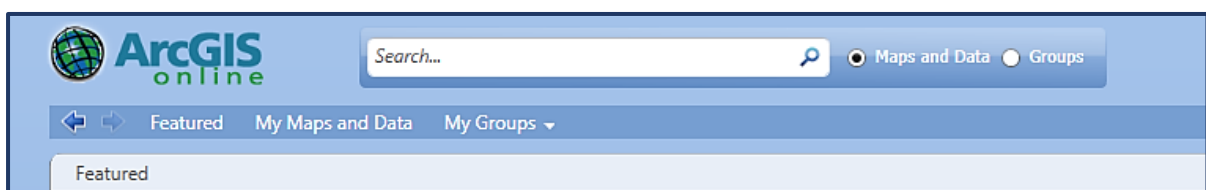
Confirm ArcMap is connected to the Spatial NI NIMA Portal, as by default ArcMap will connect to ArcGIS Online.

You can add web maps or feature layers from the Spatial NI NIMA Portal to your ArcMap document.

1. Click **File** → **Add data** → **Add data from ArcGIS portal**



2. A dialogue box will open which allows you to search for content in the Spatial NI NIMA Portal to add to ArcMap.



Spatial NI Basemaps

ArcMap will automatically connect to the basemap gallery from your active portal/AGOL account. In most cases this will be the default Esri basemaps. Your AGOL administrator can check your basemap settings through the Organisation tab → Settings → Map. It is possible to request the gallery of Spatial NI basemaps to be configured for use in your own AGOL. Ask your AGOL Administrator to contact Spatial NI via [email](#).

Spatial NI basemaps are a collection of non-editable cached maps, which display OSNI data in a variety of styles and scales. The basemap is the lowest layer of the map and is used to give spatial context to the feature layers above.

A selection of Spatial NI basemaps are available which are summarised below:

Basemap Name	Description	Cache Scales
(1:250,000) Colour	A coloured raster map of NI highlighting features such as: roads golf courses, settlements, and sites of interest.	1:550,000 - 1:120,000
(1:250,000) Outline	A black and white outline raster map of NI highlighting features such as: roads golf courses, settlements, and sites of interest.	1:550,000 - 1:120,000
1:10,000	A largescale derived raster map showing detailed information on features such as roads, fields, water and settlements.	1:20,000 - 1:5,000
Activity (1:25,000)	A series of raster maps tailored to outdoor leisure activities centred on six regions of NI (e.g. The Mourne).	1:30,000 - 1:10,000
Discoverer (1:50,000)	A mid-scale raster map giving full coverage of NI showing all roads, tourist information and relief.	1:60,000 - 1:20,000
Discoverer (1:50,000)(Grid)	A mid-scale raster map giving full coverage of NI showing all roads, tourist information and relief. This includes the Irish grid reference lines.	1:60,000 - 1:20,000
Fusion	A scalable basemap depicting detail from a NI scale to the most detailed (derived from OSNI Fusion). This includes data from Ordnance Survey Ireland.	1: 2,000,000 - 1:500
Fusion Light	A grayscale styling of the Fusion basemap.	1: 2,000,000 - 1:500
Orthophotography	High quality 3-band Ariel photography offering a detailed birds-eye view of the landscape.	1: 2,000,000 - 1:500
Streetmap	A detailed raster map showing clear street level information for towns and cities in NI.	1:20,000 - 1:5,000

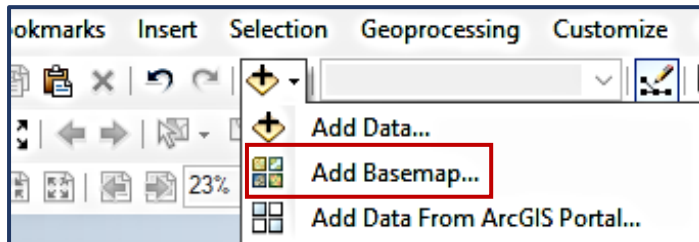
*This list is continually being updated as and when new data becomes available.

Add basemap to ArcMap

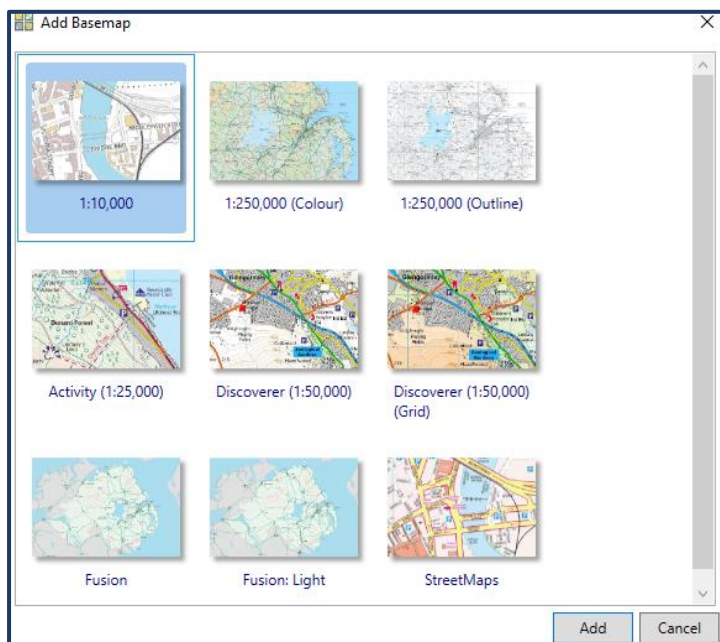
A basemap provides a background or geographical context for the content you want to display in a map. When you create a new map, you can choose which basemap you want to use from the Spatial NI basemap gallery.

The Spatial NI basemap gallery includes a variety of choices, including topography, imagery, and streets.

1. Verify that you are signed in to a Spatial NI NIMA Portal.
2. Select **Add Data**, then **Add Basemap**.



3. Click the thumbnail of the basemap you want to use in your map.



4. View information about a basemap by right clicking on the basemap in the table of contents and selecting **Properties**.

Spatial NI Metadata

Metadata provides information about mapping layers, including: owner, contact details, creation date, data origins, and legal restrictions of use.





Spatial NI uses the INSPIRE metadata standard for all hosted content. To view metadata for Spatial NI Content; access via your AGOL web interface, within the AGOL shared group. The content item page will contain the metadata from Spatial NI.

The screenshot shows the metadata page for a layer named 'Orthophotography'. The page is divided into several sections:

- Overview/Settings:** At the top, with tabs for 'Overview' and 'Settings'.
- Thumbnail:** A small map thumbnail with an 'Edit Thumbnail' link and an 'Add to Favorites' button.
- Description:** A detailed text description of the orthophotography service, including information about its accuracy, update frequency, and data source (Ordnance Survey of Northern Ireland).
- Layers:** A section showing the layer 'OSNIOrthophotography'.
- Terms of Use:** A section for adding special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.
- Item Information:** A section on the right side containing:
 - Open in Map Viewer:** A dropdown menu with options like 'Open in Scene Viewer', 'Open in ArcGIS Desktop', 'Share', and 'Metadata'.
 - Item Information:** A progress bar showing 'Low' to 'High' quality, with a 'Top Improvement: Add a longer summary' link.
 - Details:** Information about the source ('Map Service'), size ('1 KB'), and sharing settings ('Everyone (public)').
 - Owner:** The owner is 'spatialniportaladmin' with a 'Change Owner' link.

Using Spatial NI Services in ArcMap

Spatial NI are aware that analysis is a central feature to any GIS project. For some of our operational services, we offer you the ability to complete additional GIS functions depending on the type of service being used. These functions are explained below:

Service Type	Description	Analysis
 Tile Layer	Pre-rendered map raster tiles.	You will not be able to complete any analysis using these services.
 Imagery Layer	Dynamically displayed raster data.	You will be able to complete imagery based analysis on these services.
 Feature Layer	A feature layer is a grouping of similar geographic features (e.g. buildings, land parcels or roads). Features can be points, lines or polygons.	You will be able to view, edit, analyse, and execute queries against features and their attributes. You will also be able to change the layers symbology.
 Map Image Layer	A collection of map cartography based on vector data. Map image layers are dynamically rendered image tiles.	You will not be able to complete any analysis using these services.

Symbology

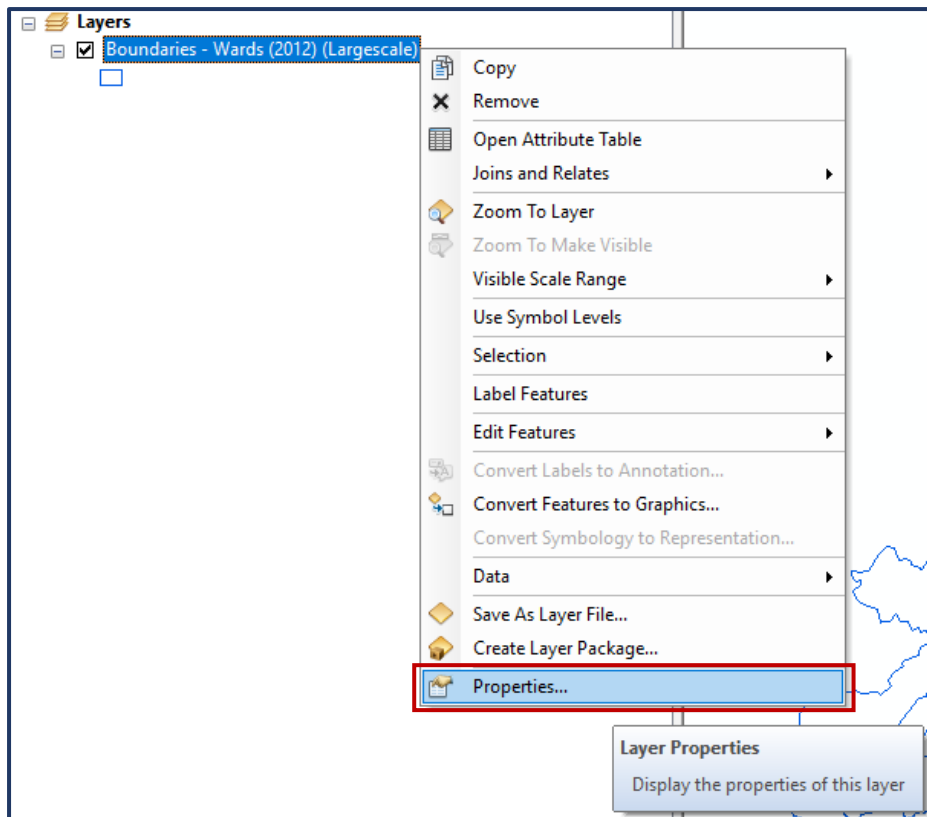
You can symbolise feature layers in different ways depending on the type of data being presented. Symbols allow you to illustrate a unique difference between features.

Once a layer has been added to the map it will symbolise the features with default symbols.

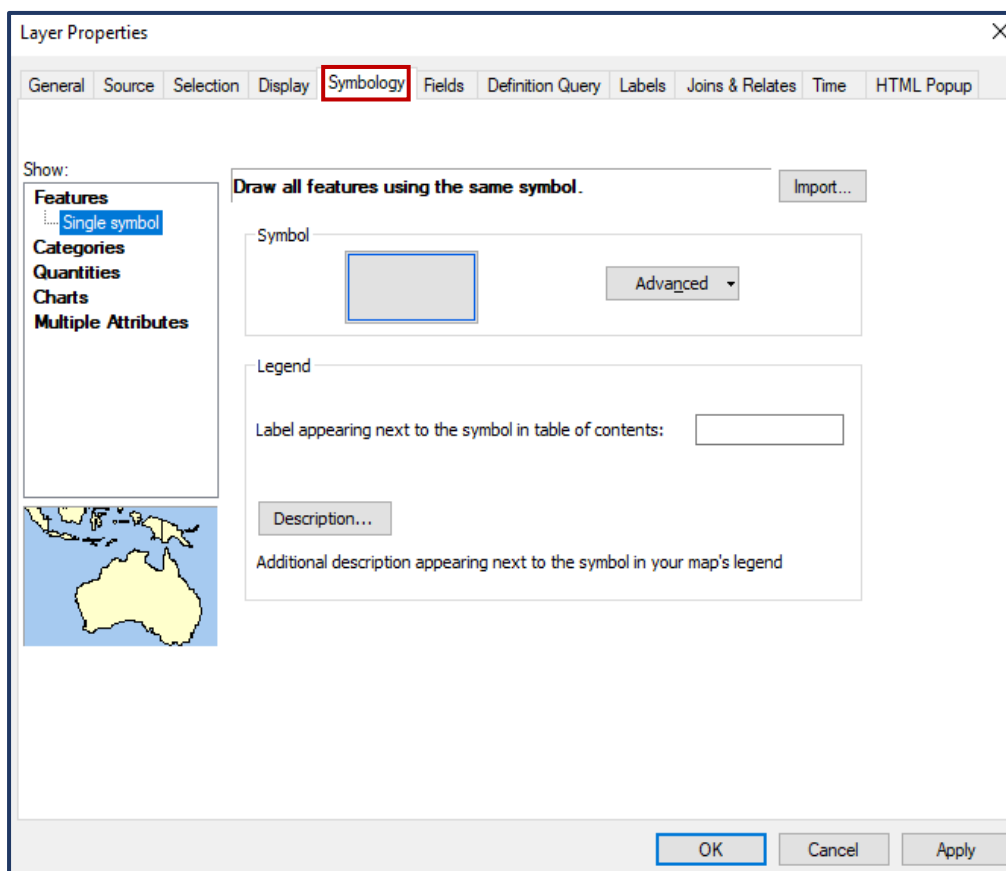
You can symbolise polygon, line or point features.

Customising Symbology

1. Select a feature layer by right clicking its title in the **Table of Contents** pane.
2. Select **Properties** from the drop down menu.



3. A **Layer Properties** window will open, select the **Symbology** tab.



4. Select your preferred symbology type in the **Layer Properties** window.

Types of Symbology

For basic use the tab labelled **Primary Symbology** is sufficient for customising the symbol and style. Within the **Primary symbology tab** you are given a drop-down menu to select the type of symbology that will best display your data. A brief describing of each symbology type is outline below:

- **Single symbol** - Single symbol symbology applies the same symbol to all features in a layer. This symbology is used for drawing a layer with just one category such as county boundaries.
- **Unique values** - Unique values symbolize qualitative categories of values. Examples include habitat types, planning zones, voting preferences, and soil classifications.
- **Graduated colours** - Graduated colour symbology is used to show a quantitative difference between mapped features by varying the colour of symbols. Data is classified into ranges that are each assigned a different colour from a colour scheme to represent the range.
- **Graduated symbols** - Graduated symbols are used to show a quantitative difference between mapped features by varying the size of symbols. Data is classified into ranges that are each then assigned a symbol size to represent the range.
- **Unclassed colours** - While graduated colours symbology distributes data into discrete classes with unique symbols, unclassed colours symbology distributes a colour scheme evenly across features.
- **Heat Map (point feature layers only)** - Heat map symbology draws point features as a representative surface of relative density. Use heat map symbology when many points are close together and cannot be easily distinguished.
- **Proportional symbology** - Proportional symbology is used to show relative differences in quantities among features.
- **Dot Density** (polygon feature layers only) - Dot density symbology is one way to represent quantities within polygons on a map. With dot density symbology, the data you symbolize is not classified.
- **Dictionary renderer** - Dictionary symbology is used to symbolize layers using a dictionary of symbols configured with multiple attributes. This approach is used when symbol specifications lead to many symbol permutations that would be inappropriate for unique value symbology.

Querying

Query expressions can be used on feature layers or on layers that contain attributes to select a subset of features according to information contained in the attribute table or from a spatial relationship.

Querying data can be a useful analysis tool as it can focus your target area by isolating records.

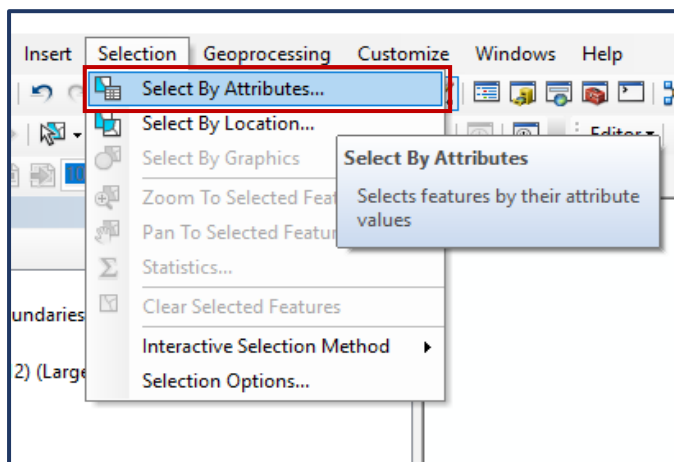
Select by Attribute

One of the selection methods you can use to select features in a layer is to select features using an attribute query. This is performed by using the **Select By Attributes** tool.

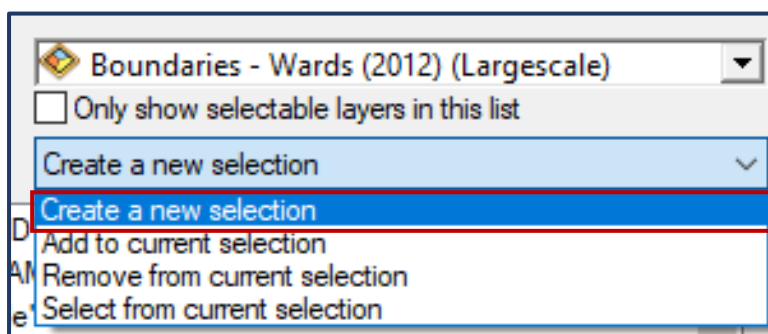
You can provide a SQL query expression which is used to select features that match the selection criteria.

In this example we are building a query to select all the Wards in the Belfast Local Government District using the query selection window.

1. Click **Selection** at the top of the page, a drop down menu will appear. Click **Select by Attributes**.



2. Choose the layer to perform the selection against. In this example we select **Boundaries - Wards (2012) (Largescale)**, and define the selection method as **Create a new selection**.



3. Query expressions can be created using several methods:
 - Using the query expression building tools.
 - Type into the query selection window
 - Use a query saved to disk.
4. The attribute table for the Boundaries – Wards (2012) (Largescale) feature layer shows there are fields for **WARDNAME** and **LGDName** (Local Government District).

OBJECTID	WARDNAME	WardCode	LGDName
76	THE BIRCHES	N08000239	Armagh City, Banbridge and Craigavon
77	THE MALL	N08000240	Armagh City, Banbridge and Craigavon
78	WARINGSTOWN	N08000241	Armagh City, Banbridge and Craigavon
79	ANDERSONSTOWN	N08000301	Belfast
80	ARDOYNE	N08000302	Belfast
81	BALLYGOMARTIN	N08000303	Belfast
82	BALLYMACARRETT	N08000304	Belfast

5. Double click on “LGDName” to add this field to the expression query. As we want to find all Wards that are in the Belfast LGD use the operator =. Finally, click on **Get Unique Values**. A list of all LGD Name’s will appear and select Belfast from the list.

Select By Attributes

Layer: **Boundaries - Wards (2012) (Largescale)**

Method: Create a new selection

Fields: "OBJECTID", "WARDNAME", "WardCode", **"LGDName"**, "AREA"

Operator: =

Value: **'Belfast'**

Get Unique Values

Go To:

SELECT * FROM 9 WHERE: **"LGDName" = 'Belfast'**

Buttons: Clear, Verify, Help, Load..., Save..., OK, Apply, Close

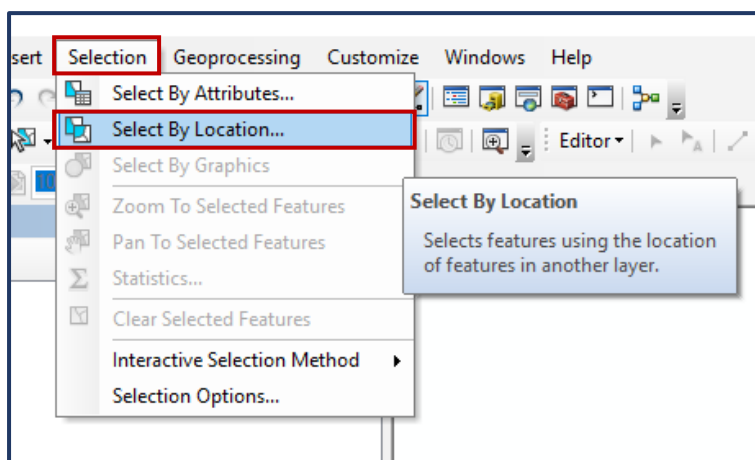
6. To ensure the query can be performed select **Verify**, and a dialogue box stating 'the expression was successfully verified' will appear.
7. Click **OK** to execute the selection expression and display the selection results.

Select by Location

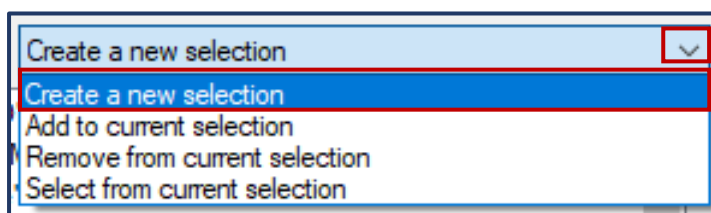
This tool allows you to select features based on their location relative to features in another layer.

In this example we will use the **Select By Location** tool to investigate which wards in Northern Ireland contain a Special Area of Conservation.

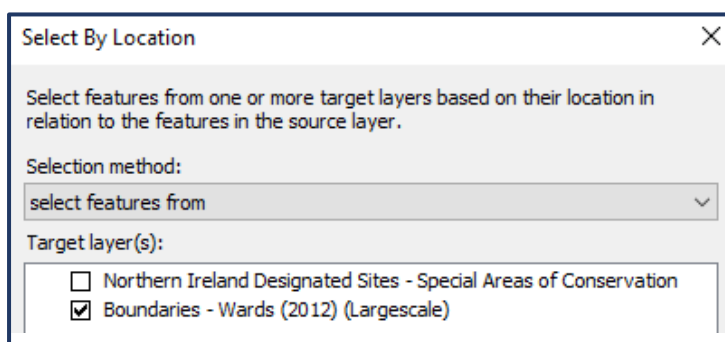
1. Click Selection, then select the **Select By Location** option.



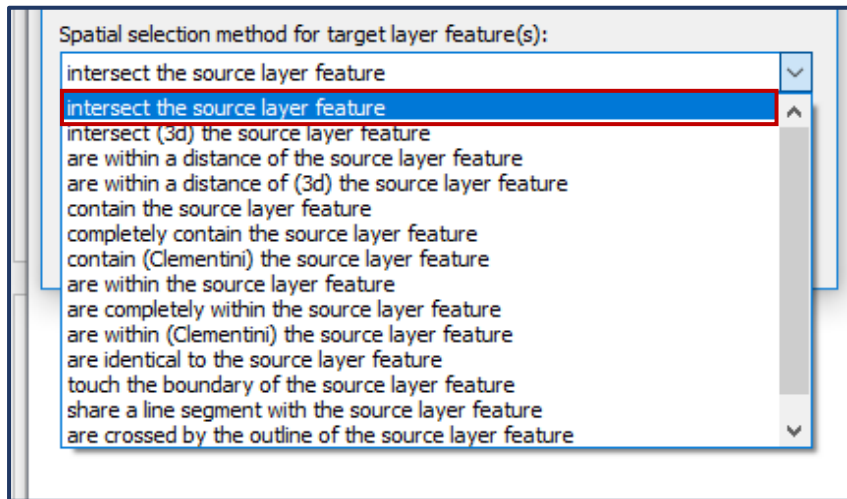
2. Define the **selection method**.
3. Choose the Target layer, this is the layer which the features will be select on.
This is Boundaries – Wards (2012) (Largescale) in this example.



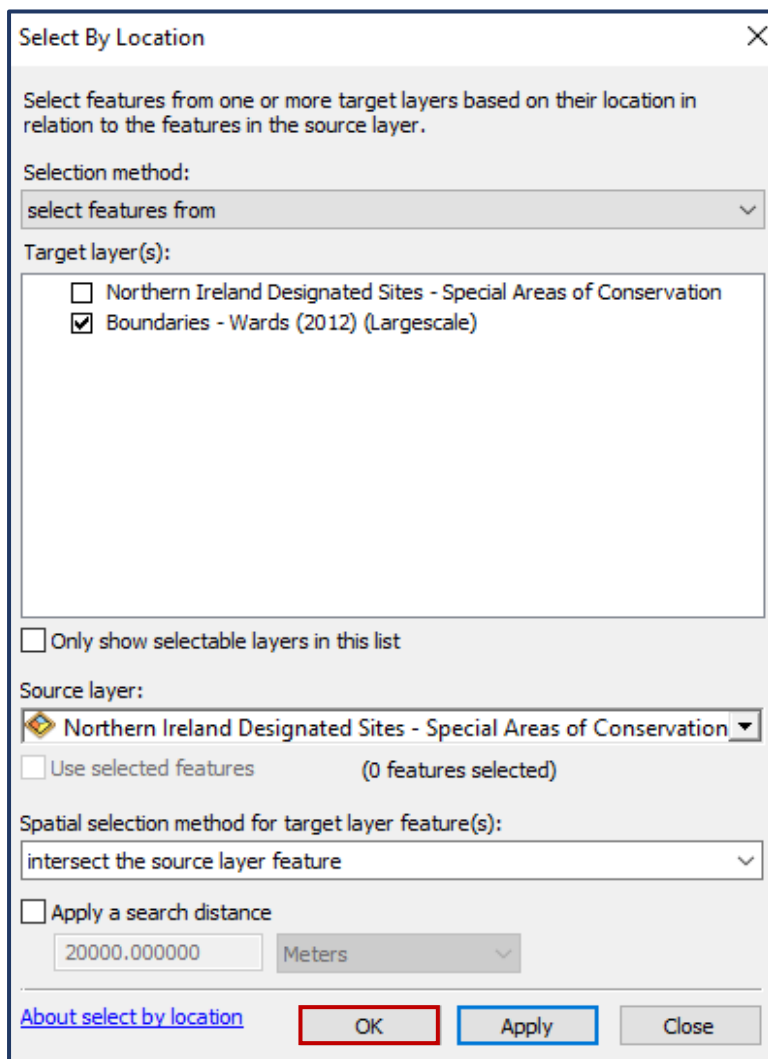
4. Choose the source layer to be used to select features from the target layer.
This is Northern Ireland Designated Sites – Special Areas of Conservation.



- Define the **Spatial selection method**, this is how ArcMap chooses to select features in the target layer. As we are selecting any ward containing a Special Area of Conservation, select **intersect with source layer feature**. Esri provides a document on types of [supported spatial queries](#).



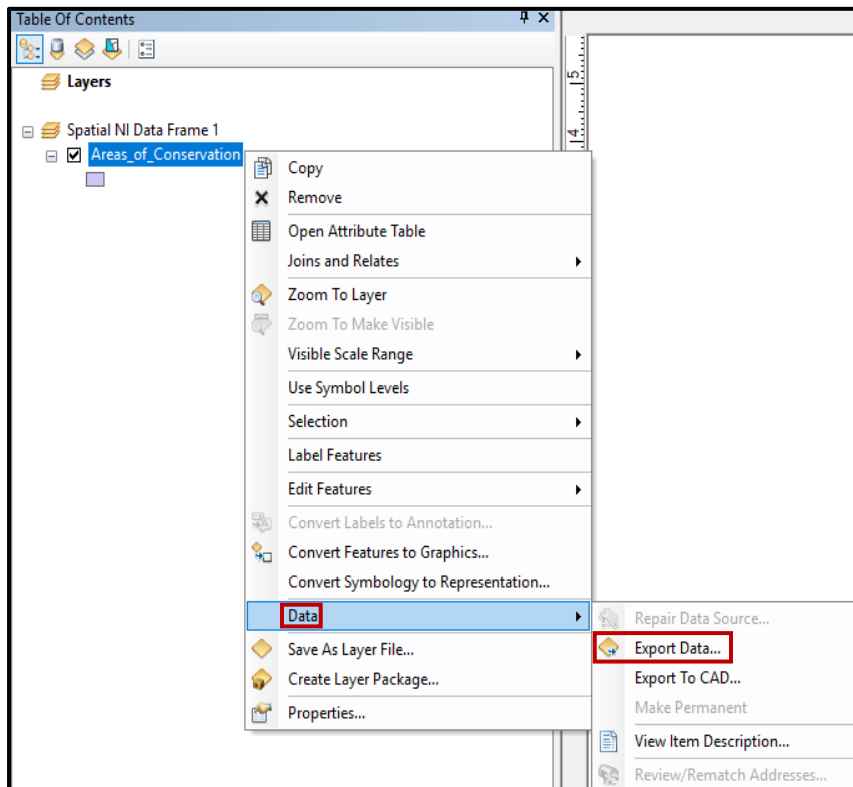
- Click **OK** to execute the selection expression and display the selection results.



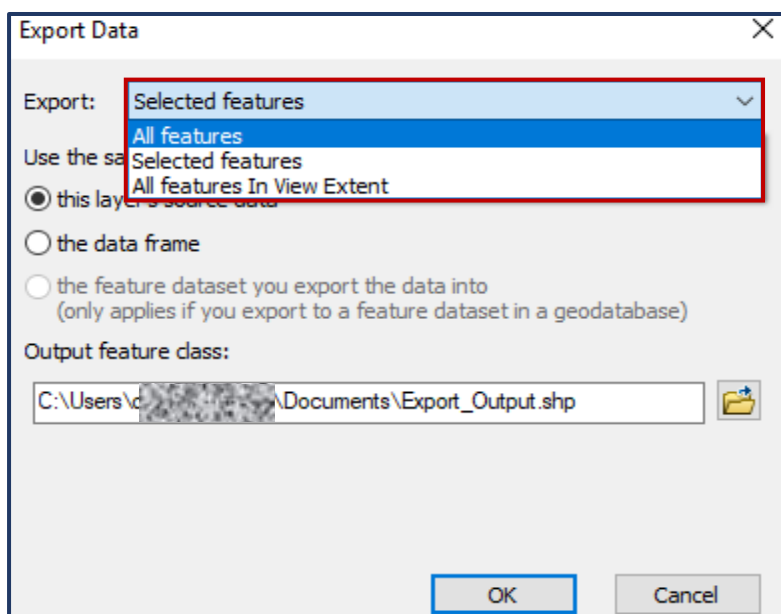
Exporting Data

With ArcMap, you can export the data for a layer to another location or format or as a subset of the features from the original data source. ArcMap can write new data to either a shapefile or geodatabase. This data can include all the original data, a selected set of the features, or only the features visible in the map's current extent.

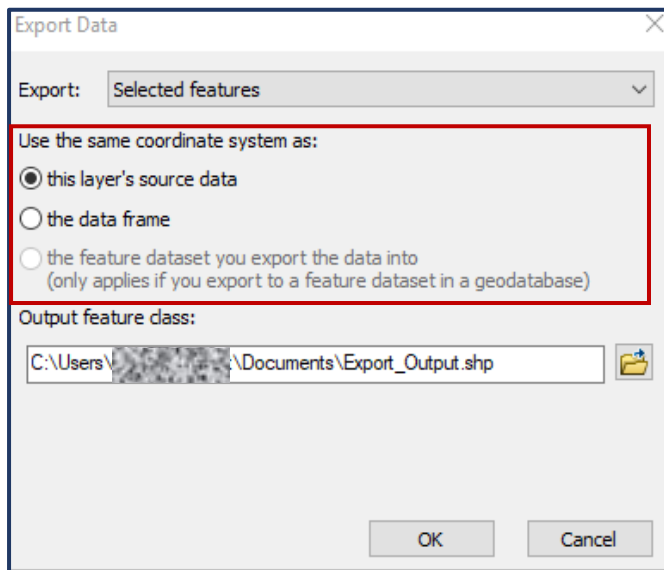
1. Right-click the layer in the table of contents and click **Data** → **Export Data**.



2. Click the Export down arrow and click **All features**, **Selected features**, or **All features in View Extent**.



3. Click the option for the output coordinate system you want to use.



4. Click the browse button and navigate to a location to save the exported data.
5. Type the name for the output data source.
6. Click the **Save as type** arrow and choose the output type.
7. Click **Save**.
8. Click **OK**.

Using OSNI Orthophotography

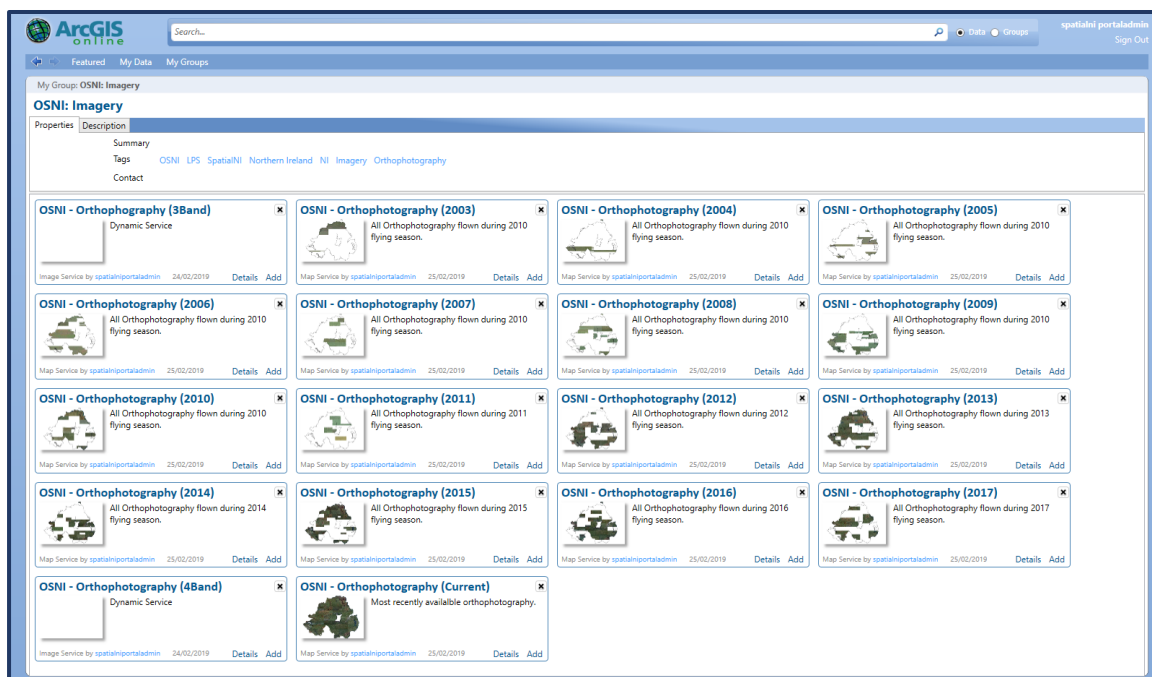
What is OSNI Orthophotography?

Orthophotography is photographs of the earth's surface from which accurate measurements can be taken. OSNI orthophotographs are created from high quality aerial images with distortions removed resulting in a scale-accurate bird's eye view of the landscape. This secured orthophotography service is updated on a quarterly basis using the latest ortho-rectified imagery. The 'flown_date' indicates the date the imagery was collected. Some tiles may have instances of anomalies e.g. cloud cover, hence when this occurs a previous ortho image may be stitched to the most recent. These are tracked using a seamline dataset. This seamline dataset has been added as the footprint for this OSNIOrthophotography image service. As such, the 'flown_date' may differ across an individual tile, if a seamline is present.

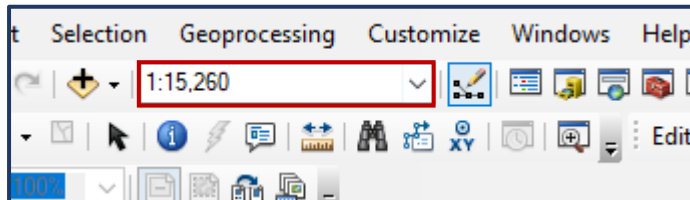
Adding 3 Band Imagery to ArcMap

3 Band image orthophotography is available through Spatial NI and can be added to ArcMap. 3 band imagery is displayed as red, green and blue bands.

1. Open ArcMap and sign in to the NIMA Spatial NI Portal
2. Click the **Add Data** icon and select **Add Data from ArcGIS Portal**
3. Select the **My Groups** tab, and then select the **OSNI: Imagery** tab.
4. The **OSNI: Imagery** group contains orthophotography from 2003 to current. Thumbnails show the coverage extent of the year's orthophotography. **OSNI – Orthophotography (3Band)** displays the most up to date 3Band orthophotography available.



5. To add orthophotography to your ArcMap document select **Add** on the **OSNI – Orthophotography (3Band)** layer. This will add to the table of contents and be visible in ArcMap.
6. The **OSNI – Orthophotography (3Band)** has been configured so it is only visible at a scale of below 1:20,000. To change the scale select the scale bar, and either type in a figure lower than 20,000 or select a pre-defined scale which is lower than 20,000.

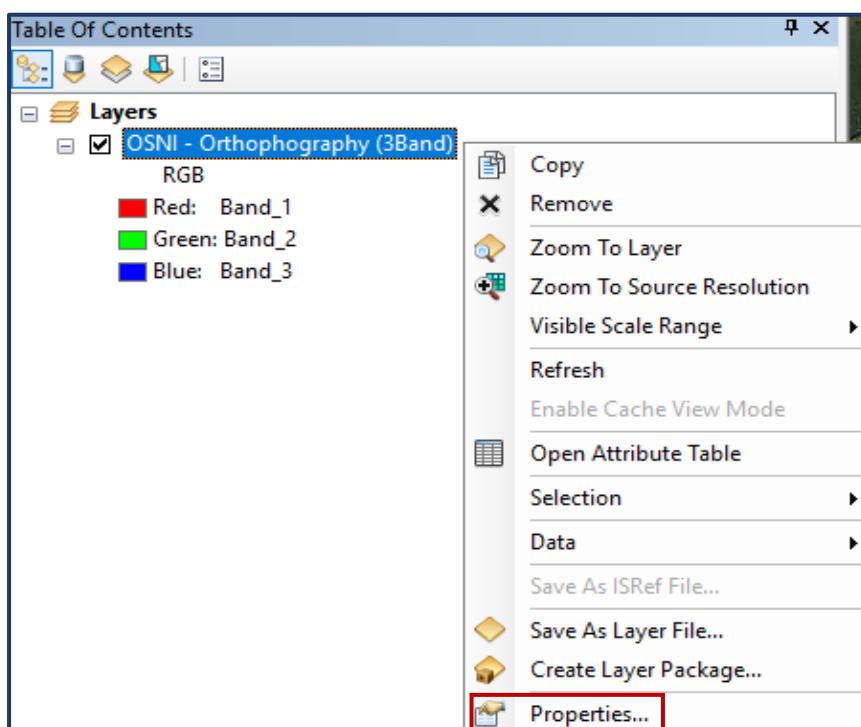


How to query flight dates using a definition query

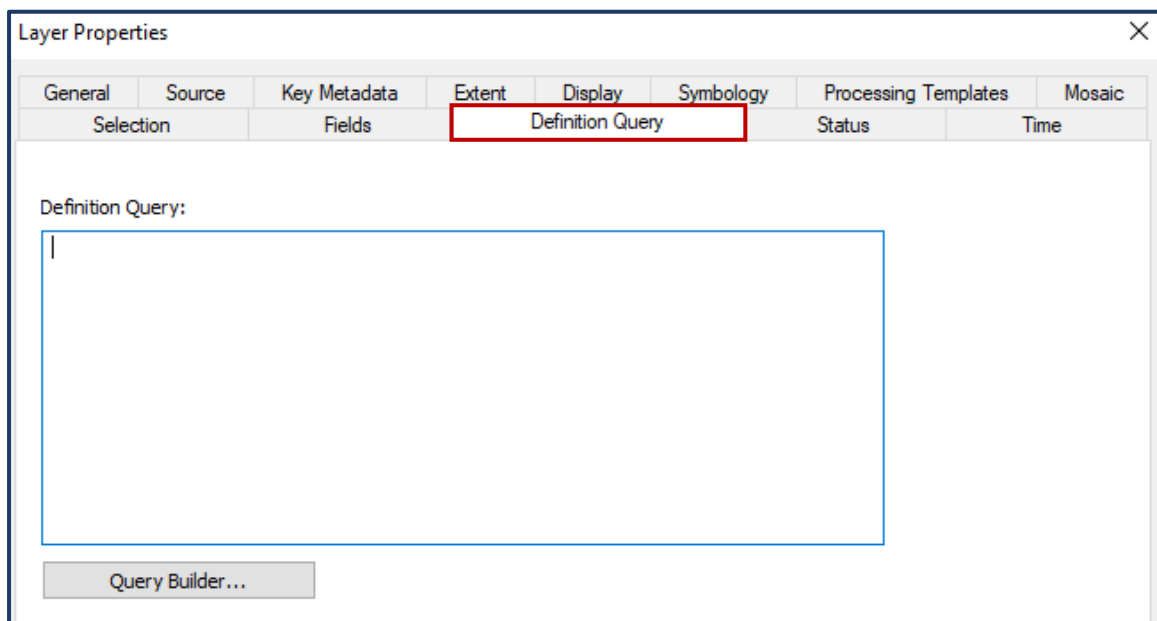
It is possible to query the 3 band orthophotography to return the date the imagery was captured for a specified area. The date the imagery was captured is known as the 'flightdate', in the imagery's attribute table in ArcMap.

Definition queries can be used when you only want to work with and draw a subset of the features. For example, you may only want to display imagery from certain years within ArcMap. Definition queries are written in SQL syntax, constructed using the query builder. Similar to the syntax in the [Select by Attribute instructions](#).

1. Add the 3Band Imagery to ArcMap, it should appear in the **Table of Contents**.
2. **Right-click** on the Imagery layer and select **Properties**.



3. In the Layer Properties dialogue box select **Definition Query**.



4. Select **Query Builder**, this will allow you to create the SQL syntax.

Adding 4 Band Imagery to ArcMap

4 band orthophotography imagery is available through the Spatial NI NIMA Portal. 4 band imagery, typically contains red, green, blue, and near infrared bands. You can choose to display the imagery in ArcMap as either natural colour (red, green, and blue bands) or colour infrared (infrared, red, and green bands).

The method for adding 4 band imagery follows the same instructions as adding 3 band imagery.

3D Analysis

OSNI have developed a digital terrain model (DTM) for Northern Ireland. This shows the elevation of the bare Earth without structures, such as buildings. The 'OSNI Terrain' layer is a 1m resolution DTM derived from the 60m DTM.

The terrain layer only contains elevation data, to add context an imagery layer will need to be draped over the terrain layer.

The OSNI Terrain layer is not configured for use in ArcMap or ArcScene. Spatial NI Support recommends using terrain layers in ArcPro.

OSNI Fusion Services

The dynamic OSNI Fusion services are individual feature classes derived from OSNI Fusion. These individual feature classes can be added to ArcMap, queried and used for editing purposes. The services are available within the **OSNI:Fusion** group.

***NOTE:** The dynamic Fusion services are only viewable at **1:5,000 scale** or below.

You can choose to add an individual layer that you wish to query. However, this may appear out of context and it may be more beneficial to add all the individual layers before editing. For viewing purposes it is important that these layers are listed in the correct order in the Contents pane. List as follows (uppermost – lowest):

- OSNI - Fusion: Feature Perimeter
- OSNI - Fusion: Buildings
- OSNI - Fusion: Structures Line
- OSNI - Fusion: Structures Polygon
- OSNI - Fusion: Transport Casing
- OSNI - Fusion: Transport Non-Vehicular
- OSNI - Fusion: Water Tidal Measure
- OSNI - Fusion: Water Course Line
- OSNI - Fusion: Water Course Polygon
- OSNI - Fusion: Standing Water Line
- OSNI - Fusion: Standing Water Polygon
- OSNI - Fusion: Ground Cover (Vegetation)
- OSNI - Fusion: Ground Cover (Man-made)
- OSNI - Fusion: Ground Cover (Bare Soil)
- OSNI - Fusion: Land Parcel
- OSNI - Fusion: Geographic Extent
- OSNI - Fusion: Ireland Sea

Querying

All the dynamic Fusion services can be queried according to a field within the attribute table. Select the desired layer in the Contents pane and right-click to open the Attribute table. Change to the field view to see the data available to query.

Either add a definition query to the feature layer or select by attributes to isolate a select set of records. See '[Querying – 3 Band Image Analysis](#)' for a step by step guide.

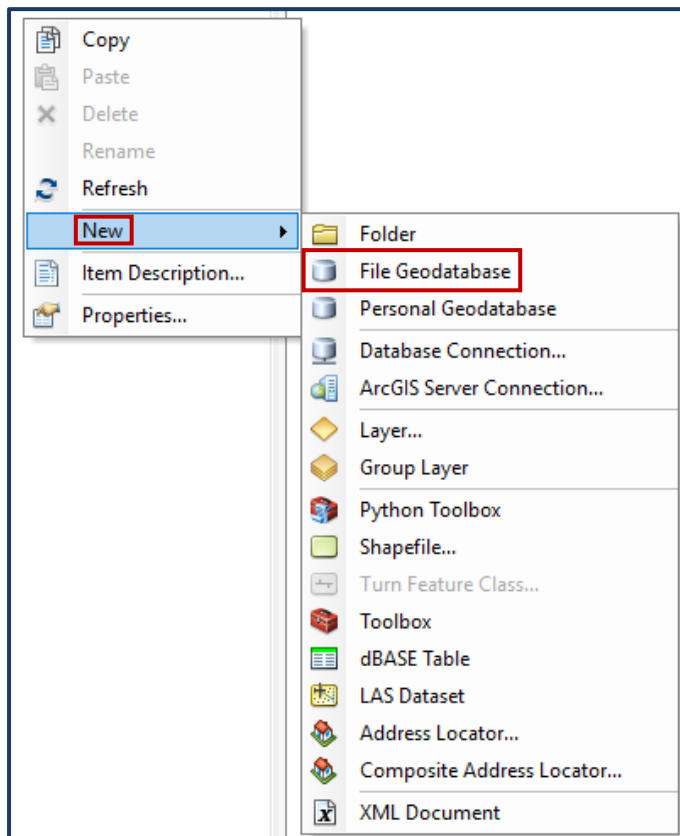
Snapping

Snapping is a tool used to assist drawing features on a map, in relation to existing points, lines or polygons. To create new features you first need to create a new file geodatabase and feature class. The new feature can be set to snap to a features: point, end, vertex, edge, mid-point, intersection or tangent.

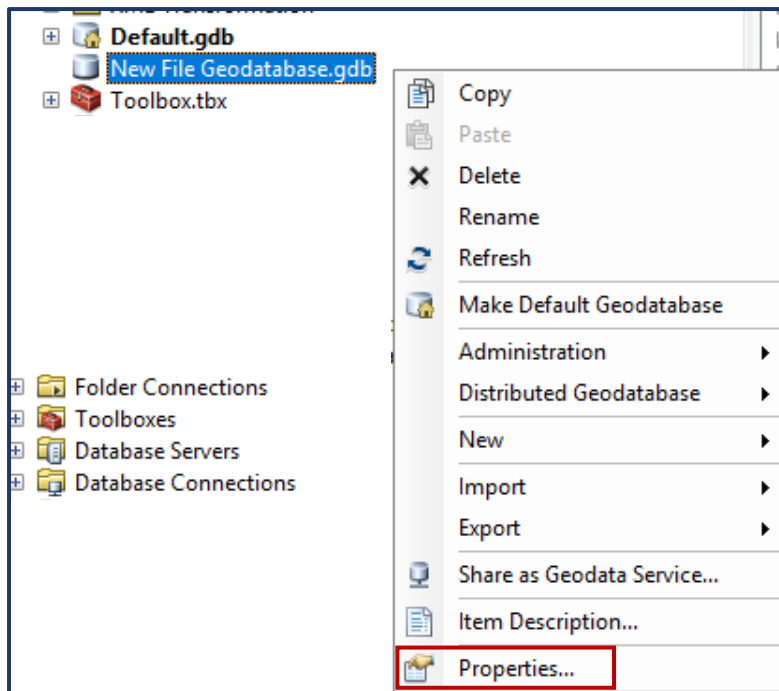
Creating a file geodatabase

A file geodatabase is stored within your current project in ArcMap. It is a type of folder that allows you to create your own feature classes and content within.

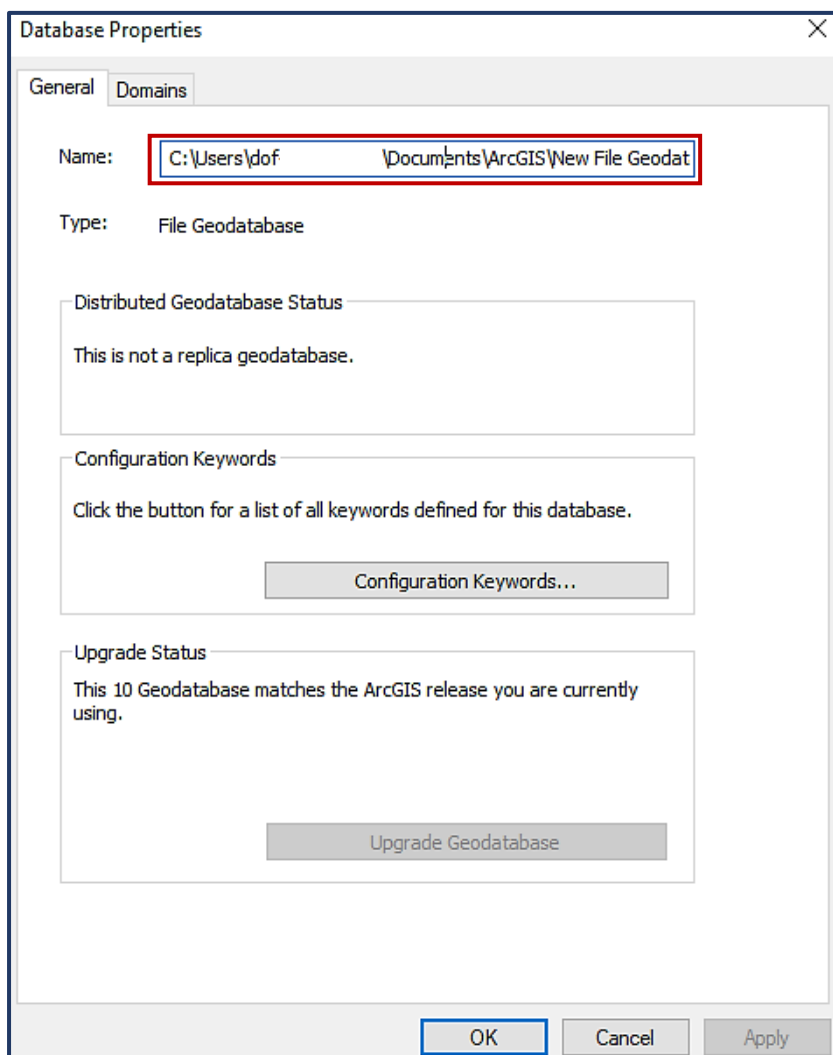
1. **Right-click** in the **Catalog** pane and select **New → File Geodatabase**.



2. A new file geodatabase called **New File Geodatabase.gdb** will appear in the **Catalog** pane.
3. To change the name, right click on the new file geodatabase and select **Properties**.



4. Type your chosen name in the **Database Properties** window.



Sharing Maps

Page Layout

A page layout is a collection of map elements organised on a virtual page designed for map printing. Common map elements include one or more data frames (each containing an ordered set of map layers), a scale bar, north arrow, map title, descriptive text, and a legend.

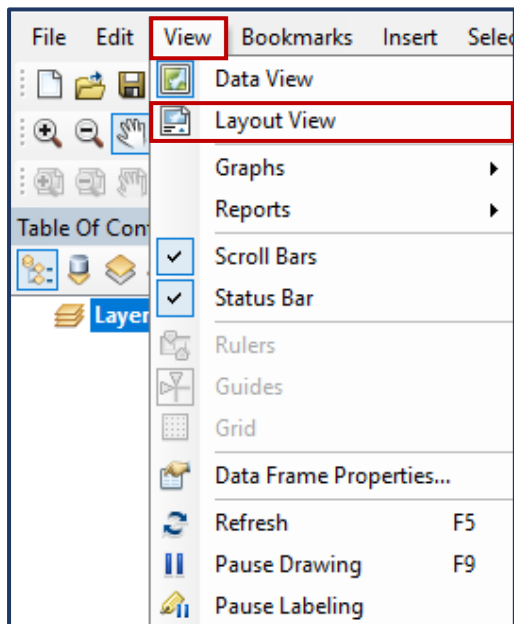
Though page layouts can be exported and used electronically, they are primarily designed for printing. Page layouts can have either a landscape (wide) or portrait (tall) orientation. Page size varies depending on the specifications for the output. What you see on the layout is what you get if you print or export the map to the same page size.



Map displayed in **layout view**, produced using Spatial NI services

Creating a new page layout

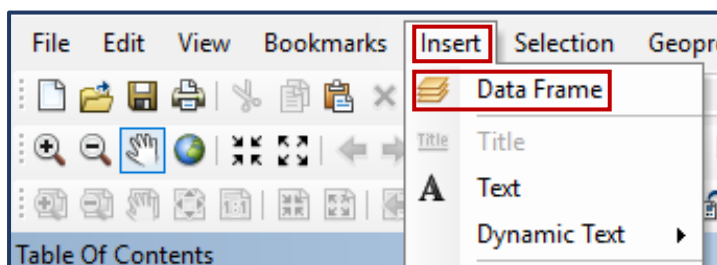
1. Select Layout View from the View menu or by clicking the Layout View button on the lower left of the map display.



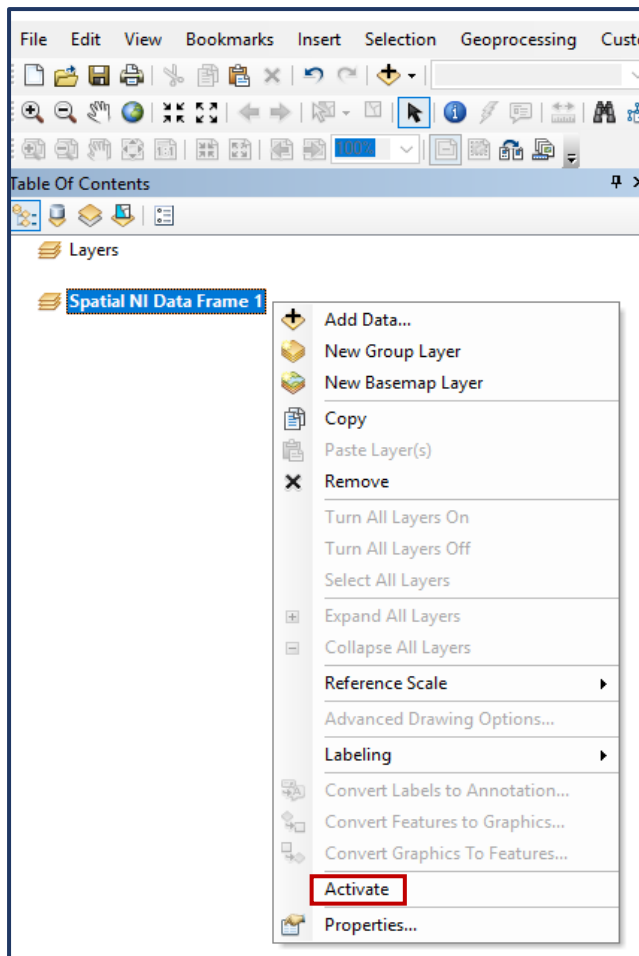
Adding a data frame to the page layout

The data frame displays a collection of layers drawn in a particular order for a given map extent and map projection. You can insert additional data frames. These additional data frames may be for overview or detail maps.

1. Select the Insert menu and select Data Frame

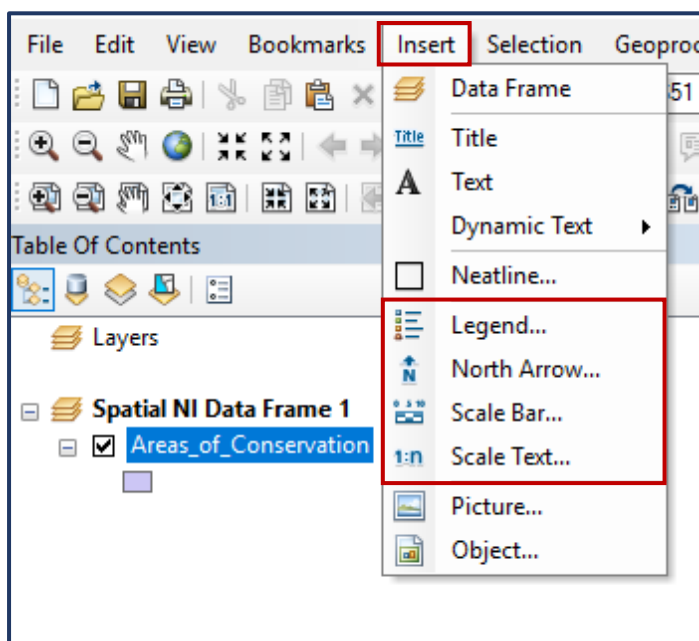


2. To make a data frame active, right-click on its name in the table of contents and select **Activate** or single-click the data frame on the page layout.

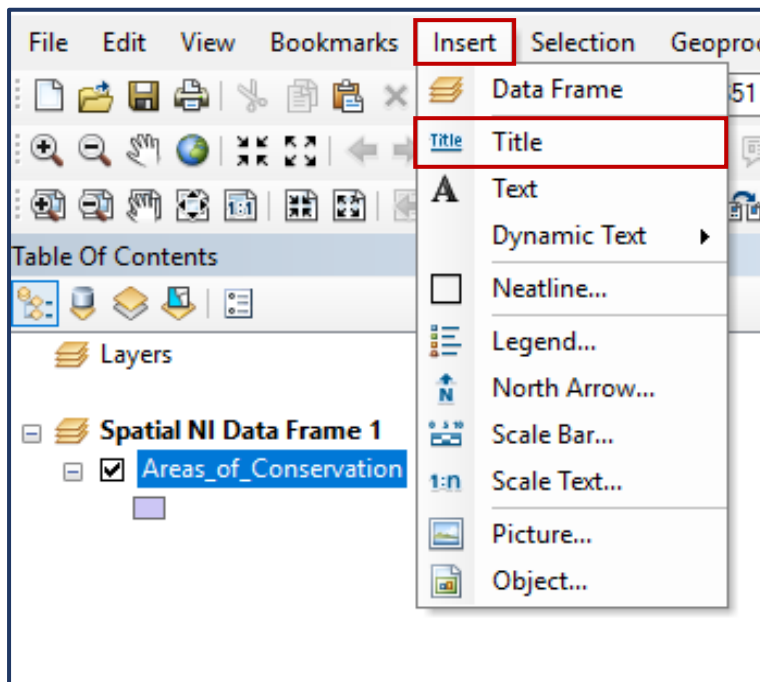


Adding other map elements to the page layout

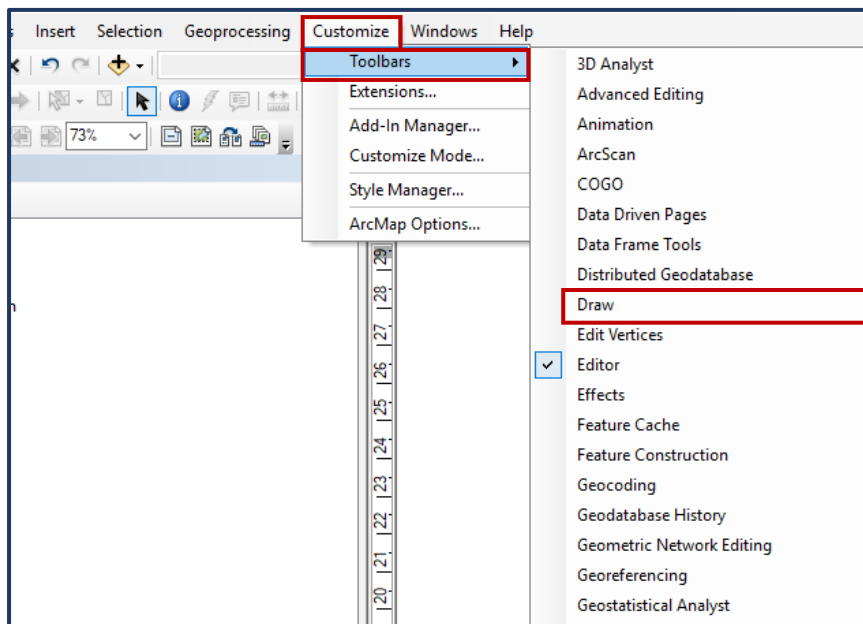
1. Use the Insert menu to select other map elements to add to your layout (Legend, North Arrow, Scale Bar, and Scale Text).



2. You can use this menu to add a **Title** to the map.



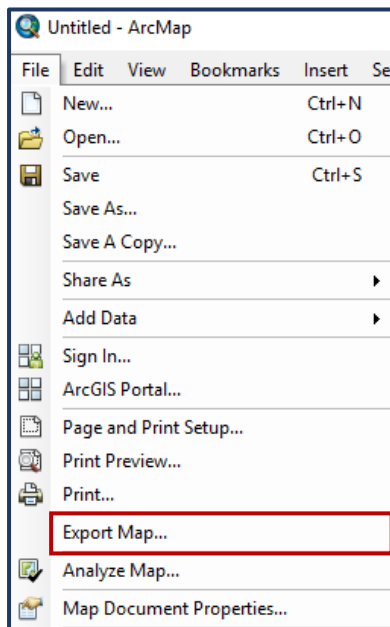
3. The **Draw toolbar** can be used to add graphic shapes such as rectangles, lines, and points.



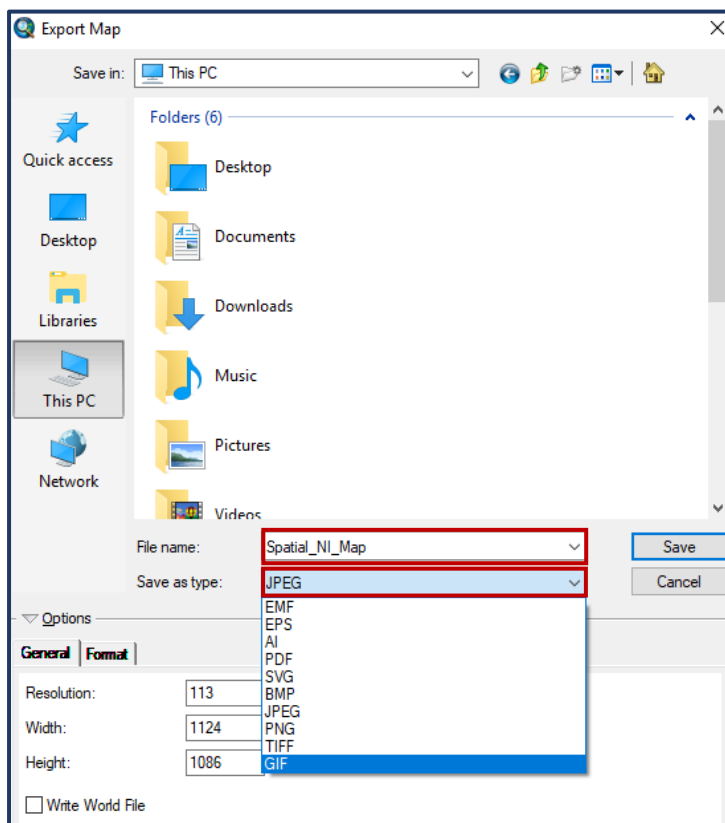
Map Export

After creating your map, there are several methods of sharing it. A popular method of sharing is exporting the map to a chosen file format. You can then decide what to do with the file.

1. To export a map, select **File** and then **Export Map**.



2. You can then name the file, and select the map export format by using the **Save as type** option.



Esri provides an extensive list of descriptions of [map export formats](#).

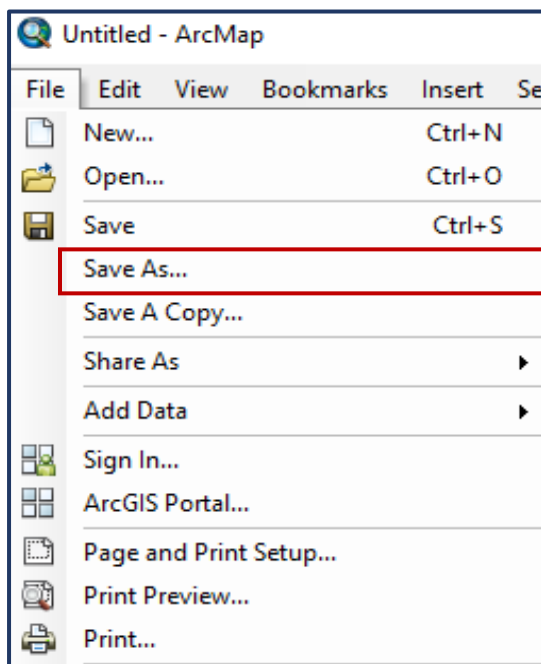
You can specify the resolution at which the map is exported, a higher value will provide a sharper image. However, this can also dramatically increase file size, and therefore processing time.

Spatial NI cached services have been cached at 96dpi for optimised screen viewing. However, these have also been configured for printing.

Saving

When you have finished working on a map you can save it and close ArcMap. Maps are saved as documents on your hard drive using the name and folder location you provide. All maps automatically have the .mxd file extension added to the map document name.

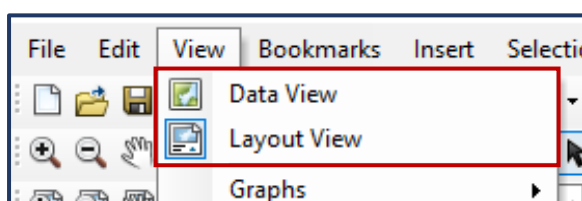
1. To save a map select **File**, and then **Save** or **Save As**



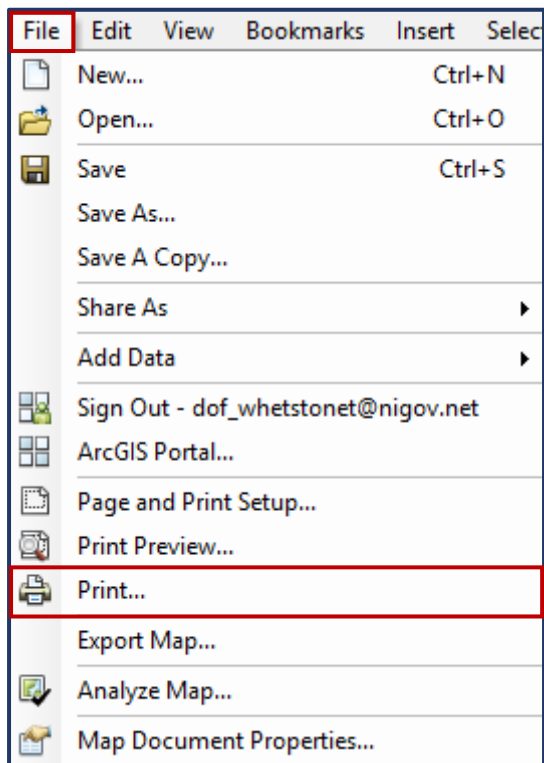
Printing

You use the Print tool to print a map in ArcMap, where you can print the data frame view or the layout view of your map.

1. Select the view to print (data or layout)



2. Click **File** → **Print**



3. The Print dialogue box will appear. Check the settings are correct and select **OK** to print.

