

Spatial NI

NIMA Portal 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



Ordnance Survey of Northern Ireland Lanyon Plaza | 7 Lanyon Place | Belfast | BT1 3LP https://www.spatialni.gov.uk

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About This Guide

This guide has been written to assist you when using web services from the Spatial NI Portal for NIMA (Northern Ireland Mapping Agreement) participants 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 the Spatial NI NIMA Portal?

The Spatial NI NIMA portal is a Spatial Data Infrastructure (SDI) available to all NIMA participants in Northern Ireland. It is a "one stop shop" for finding spatial data and facilitates the use of this data in both web applications and desktop software.

Functionality available includes:

- The ability to view and interrogate OSNI and other geospatial information in a web application
- The ability to search our catalogue of services and view the service metadata
- The ability to add services to ArcGIS Pro and complete complex spatial analysis

Who can gain Access to the Spatial NI NIMA Portal?

Access to the Spatial NI NIMA portal is available to all NIMA participants. This includes all Northern Ireland Civil Servants, Local Government staff and employees of approved Arm's Length Bodies (ALB's).

How to gain Access to the Spatial NI NIMA Portal?

The Spatial NI NIMA portal is configured to provide a single sign-on experience for all NIMA users. This is made possible by using technology called Active Directory Federated Services (ADFS).

For Northern Ireland Civil Servants, this has already been configured for you.

For other NIMA participants, you need to have an instance of ADFS on your own infrastructure. Trust then needs to be established between your infrastructure and the Spatial NI platform.

If 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 the Spatial NI NIMA Portal via ArcGIS Administrator

ArcMap connects to ArcGIS Online by default, but you can set your ArcGIS Desktop to connect to the Spatial NI NIMA Portal using the Manage Portal Connections tool in ArcGIS Administrator.

- 1. Close all ArcGIS Desktop applications
- 2. Open ArcGIS Administrator from All Programs > ArcGIS > ArcGIS Administrator.
- 3. Click Advanced

Se ArcGIS Administrator -		\times
ArcGIS (SONR00360) ArcGIS (SONR00360) ArcGIS Configuration Information: DESKTOP Installation Information Product Name: ArcGIS Desktop 10.6.1 Release Version: 10.6.1, 19270 Installed By: norwoosa Install	.6\ 	
Help OK Cancel	Apply	/

4. Click Manage Portal Connections

Advanced Configuration	\times
Display Language Select a language to use for ArcGIS Desktop and ArcGIS Engine:	
Display language (English - United States) \sim	
License Expiration	
Show license expiration warning messages.	
Esri User Experience Improvement	
Participate in the Esri User Experience Improvement Program. Learn More	
ArcGIS Online	
Manage Portal Connections	
Support connecting to local portal with no network	
Save Cancel	

5. Click Add.

Manage Portal for ArcGIS Connections	×
http://www.arcgis.com/	Connect
	Add
	Remove
	Properties
	Dismiss

6. Type the URL of the Spatial NI NIMA Portal, then click **OK** to save the connection.

Spatial NI NIMA Portal → <u>https://portal.spatialni.gov.uk/portal</u>

Add Portal for ArcGIS	×
Enter the URL of your Portal for ArcGIS.	
https://portal.spatialni.gov.uk/portal	
Example: https://webadaptor.domain.com/arcgis	OK Cancel

7. Now that the portal is added to the connection list select the URL you just added and click Connect.

Manage Portal for ArcGIS Connections	×
http://www.arcgis.com/ https://portal.spatialni.gov.uk/portal/	Connect
	Add
	Remove
	Properties
	Dismiss

Remove and edit portal connections

ArcMap can only connect to one portal at a time. Therefore, to change, remove and edit portal connections it is necessary to use the Manage Portal Connections tool in ArcGIS Administrator. Multiple portal connections can be stored in ArcGIS Administrator.

Change the connected portal

- 1. Close all ArcGIS Desktop applications.
- 2. Open ArcGIS Administrator from All Programs > ArcGIS > ArcGIS Administrator.
- 3. Click Advanced.
- 4. Click Manage Portal Connections.
- 5. Select the required portal connection and click **Connect**.

Remove portal connections

- 1. Close all ArcGIS Desktop applications.
- 2. Open ArcGIS Administrator from All Programs > ArcGIS > ArcGIS Administrator.
- 3. Click Advanced.
- 4. Click Manage Portal Connections.
- 5. Select the required portal connection and click **Remove.**

Manage Portal for ArcGIS Connections	×
http://www.arcgis.com/ https://portal.patialpi.gov.uk/portal/	Connect
	Add
	Remove
	Properties
	Dismiss

Edit portal connections URL

- 1. Close all ArcGIS Desktop applications.
- 2. Open ArcGIS Administrator from All Programs > ArcGIS > ArcGIS Administrator.
- 3. Click Advanced.
- 4. Click Manage Portal Connections.
- 5. Select the required portal connection and click **Properties**.

Manage Portal for ArcGIS Connections	×
http://www.arcgis.com/ https://portal.spatialni.gov.uk/portal/	Connect
	Add
	Remove
	Properties
	Dismiss

- 6. Edit the URL and click **OK**.
- 7. Select the required portal connection and click **Connect**.

Sign in to Spatial NI NIMA Portal

You can access the portal's data by connecting to it in ArcMap.

1. Start ArcMap and click **File > Sign In**.

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e*	Open Ctrl+O				
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	Save As	5			
	Save A	Сору			
	Share A	s			•
	Add Da	ta			•
	Sign In.				
	ArcGIS	Portal			

2. Sign in to the portal using the **NIMA** option.

ArcGIS Desktop wants to access y	our SpatialNI	NIMA Portal account	information
Sign in to SpatialNI NIMA Portal	esri		
Using			
NIMA			
OR			
ARCGIS			

Adding data from the Spatial NI NIMA Portal to ArcMap

You can add web maps, feature layers, tile layers, and map packages from the portal to ArcMap.

- 1. In ArcMap, click File > Add Data > Add Data From ArcGIS Portal.
- 2. In the dialog box that opens, search for data and maps in the portal. You can also open the groups you have access to and add data from them.
- 3. Double-click a web map, web layer, or package to add it to your map or click **Add**.

Finding and Viewing Content

Spatial NI provides two types of services accessible via the NIMA portal. These are:

- Basemaps non editable cached maps which display OSNI data in a variety of styles and scales.
- Operational Content Other OSNI and third party organisations data. This can be either cached raster or editable vector data.

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.

	Search P	Maps and Data
Featured My Maps and	i Data My Groups 👻	
Featured		

Spatial NI Basemaps

When connected to the **Spatial NI NIMA Portal** you will have access to our basemaps. These are a collection of non-editable raster/vector maps, which display Northern Ireland mapping 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 Mournes).	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**.

Add Data via a Group

Content has been organised into groups which any user can join upon request. The groups should be used as folders to find similar data quickly without searching through 'All Portal' for a related tag each time.

Joining a group is quick and easy:

- 1. **Sign into** the NIMA Portal web interface.
- 2. Within the **Groups tab**, navigate to **My Organisation** to see the full list of Spatial NI Groups.
- 3. To join the group, enter the groups page and click **Join Group**.
- 4. **Refresh** your portal in **ArcGIS Pro** to see the joined group(s).

Spatial NI Groups:

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

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.

Orthophotog	raphy 🖌 Edit			
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 Edit Thumbnail 	Most recently available orthophotography.	Edit	Open in Map Vie	wer V
	Ile Layer by spatialniportaladmin	<i>y</i> 201	Open in Scen	ne Viewer
	Created: 8 Feb 2019 Updated: 21 Feb 2019 View Count: 1		Open in ArcGl	S Desktop
★ Add to Favorites			Share	a
Description		🖌 Edit	Metada	eta
Orthophotography is pho orthophotographs are cre- view of the landscape. Thi imagery. The flown_date in cover, hence when this oc dataset. This seamline dat flown_date may differ acro published - January 2019	tographs of the earth's surface from which accurate measurements can be taken. OS ated from high quality aerial images with distortions removed resulting in a scale-ac s secured orthophotography service is updated on a quarterly basis using the latest rolicates the date the imagery was collected. Some tiles may have instances of anaor curs a previous ortho image may be stitched to the most recent. These are tracked u aset has been added as the footprint for this OSNIOrthophotography image service ses an individual tile, if a seamline is present. Data owner: Ordnance Survey of North Date updated - N/A Scale thresholds - N/A Access and use constraints	INI curate bird's eye ortho-rectified malies e.g. cloud sing a seamline . As such, the ern Ireland Date	Leem Information	Learn more High dd a longer summary
Layers			Shared with: Everyone (pu	ıblic)
OSNIOrthophotography			\star \star \star \star	
			Owner	🛓 Change Owner
Terms of Use		🖌 Edit	👤 spatialniportaladmir	n
Add any special restrictions	, disclaimers, terms and conditions, or limitations on using the item's content.			

Using Spatial NI Services

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	Туре	Description	Analysis
	Tile Layer	Pre-rendered map raster tiles.	You will not be able to complete any analysis using these services.
E	Imagery Layer	Dynamically displayed raster data.	You will be able to complete imagery based analysis on these services.
0	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.

🖃 🥩 Layers			
Boundaries - Wards (2012) (Largescale)	阍	Copy	
	×	Remove	
	m	Open Attribute Table	
	<u></u>	Joins and Relates	
		Zoom To Laver	
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		Use Symbol Levels	
		Selection	
		Edit Features	
	-P A	Convert Labels to Annotation	
	%	Convert Features to Graphics	
		Convert Symbology to Representation	
		Data + 5	1
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	1	Properties	_
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		Layer Properties	Ĺ
		Display the properties of this layer	ľ
			L

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

General Source Selection Display Symbology Fields Definition Query Labels Joins & Relates Time HTML Popup Show: Features Single symbol Categories Quantities Charts Multiple Attributes Legend Label appearing next to the symbol in table of contents: Description Additional description appearing next to the symbol in your map's legend	Layer Properties		×
Show: Features Import Single symbol Symbol Categories Advanced Quantities Advanced Charts Legend Label appearing next to the symbol in table of contents: Description Additional description appearing next to the symbol in your map's legend Additional description appearing next to the symbol in your map's legend	General Source Selection	n Display Symbology Fields Definition Query Labels Joins & Relates Time HTML Pop	oup
Multiple Attributes Legend Label appearing next to the symbol in table of contents:	Show: Features Single symbol Categories Quantities Charts	Draw all features using the same symbol. Import	
	Multiple Attributes	Legend Label appearing next to the symbol in table of contents: Description Additional description appearing next to the symbol in your map's legend	

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 descripting 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 At	tributes			×
Layer:	📀 Bound	aries - Wards (20 w selectable layers	12) (Largesca s in this list	le) 💌
Method:	Create a ne	w selection		~
"OBJECTID "WARDNA "WardCode "LGDName "AREA"	" " "			
= <>> > >= < <= _ % () Is In	 Like And Or Not Null 	'Antrim and New 'Ards and North 'Amagh City, Ba 'Belfast' 'Causeway Coas < Get Unique Valu	townabbey' Down' Inbridge and Cr st and Glens' Les Go To:	aigavon'
SELECT * FR	OM 9 WHEF	RE:		
"LGDName"	= 'Belfast'			< · · ·
Clear	Verify	Help	Load	Save
		ОК	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.

Create a new selection	\sim
Create a new selection	
Add to current selection	
Remove from current selection	
Select from current selection	

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.

~ ~
×
~

5. 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 <u>supported spatial queries</u>.



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

Select By Location	×
Select features from one or more target layers based on their location in relation to the features in the source layer.	
Selection method:	
select features from	\sim
Target layer(s):	
 Northern Ireland Designated Sites - Special Areas of Conservation Boundaries - Wards (2012) (Largescale) 	
Only show selectable layers in this list	
Northern Ireland Designated Sites - Special Areas of Conservation	•
Use selected features (0 features selected)	
Spatial selection method for target layer feature(s):	
intersect the source layer feature	
20000.000000 Meters V	
About select by location OK Apply Close	

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** \rightarrow **Export Data**.

Table Of Contents		д ,	<			
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<i>≣</i> Layers			14	2		
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		Selection		•		
		Label Features				
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	\$□	Convert Features to Graphics				
		Convert Symbology to Representation.				
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	Ŷ	Create Layer Package				Export To CAD
	8	Properties				Make Permanent
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				9	2	Review/Rematch Addresses

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

Export Data	<					
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O the data frame						
 the feature dataset you export the data into (only applies if you export to a feature dataset in a geodatabase) 						
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OK Cancel						

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

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🔿 the dat	ta frame					
⊖ the fea (only a	ture dataset you export the data into pplies if you export to a feature dataset in a geodatabase)					
Output fea	ature class:					
C:\Users	C:\Users\\Documents\Export_Output.shp					
	OK Cancel					

- 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 anaomalies 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 the Spatial NI NIMA Portal 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.
- 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.

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Image Service by spatialniportaladmin 24/02/2019 Details Add	Map Service by spatialniportaladmin 25/02/2019 Details Add		

- 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.
- 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.



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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.

- 🖹 Copy 🛱 Paste × Delete Rename Refresh E Folder New ۲ Item Description... File Geodatabase Personal Geodatabase Properties... Database Connection... ArcGIS Server Connection... Cayer... Group Layer Python Toolbox Shapefile... Turn Feature Class... Toolbox dBASE Table LAS Dataset Address Locator... Composite Address Locator... XML Document
- 1. **Right-click** in the **Catalog pane** and select **New** \rightarrow **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**.

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

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Upgrade This 10 (using,	e Status Geodatabase matches the ArcGIS release you are currently	
	Upgrade Geodatabase	
	OK Cancel	Apply

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 a file format. You can then decide what to do with the file.

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

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File	Edit View Bookmarks	Insert	Se			
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a	Print					
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2. You can then name the file, and select the map export format by using the **Save as type** option.

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	File name:	Spatial_NI_Map	~	Save
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General Format		PDF		
Resolution:	113	BMP		
Width: 1124		PNG		
Height:	1086	GIF		
Write World F	File			

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)

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2. Click File → Print

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

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