



OS MASTERMAP TOPOGRAPHY LAYER[™] – GETTING STARTED GUIDE

ORDNANCE SURVEY GB

Version history

Version	Date	Description
1.0	02/2023	First release

Purpose of this document

This document provides information about and insight into the OS MasterMap Topography Layer product and its potential applications. For information on the contents and structure of OS MasterMap Topography Layer, please refer to the Overview and Technical Specification.

The terms and conditions on which OS MasterMap Topography Layer is made available to you and your organisation are contained in that Ordnance Survey customer contract. Please ensure your organisation has signed a valid current customer contract to be able to use OS MasterMap Topography Layer.

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I. Obtaining OS MasterMap Topography Layer data

This getting started guide shows you how to load OS MasterMap Topography Layer into several commonly used geographical information system (GIS) applications.

I.I Product formats

OS MasterMap Topography Layer is available the following formats:

- GeoPackage (area of interest AOI only)
- Vector tiles (MBTiles)
- Geography Markup Language (GML) 2.1.2

The GML download ZIP package contains a GZ (.gz) file, which does not require extraction and contains multiple GML (.gml) files.

The GML data is supplied in 5km² tiles, but features are not clipped at the tile edges, resulting in what is called "hairy" tiles. All tiles contain six elements:

- Cartographic Symbol
- Cartographic Text
- Boundary Line
- Topographic Point
- Topographic Line
- Topographic Area

OS MasterMap Topygraphy Layer can be downloaded from the OS Data Hub (https://osdatahub.os.uk/).

I.2 Media

OS MasterMap Topygraphy Layer is not available via hard media supply.

I.3 Using GeoPackage and vector tile formats

This getting started guide focuses on using the product in GML and shapefile format.

For guidance on using the product in GeoPackage or vector tiles formats, please see the following generic getting started guides, which are available on the <u>OS MasterMap Topography Layer Product Support page</u> on the <u>OS website (https://www.ordnancesurvey.co.uk/business-government/tools-support/mastermap-topography-support</u>):

- Getting Started with GeoPackage (https://www.ordnancesurvey.co.uk/documents/getting-started-with-geopackage.pdf).
- Getting Started with Vector Tiles (https://www.ordnancesurvey.co.uk/documents/user-guides/getting-started-with-vector-tiles-v1.0.pdf).

2. QGIS

These instructions are based on QGIS version 3.22.4 and assume you have set the default coordinate reference system to British National Grid (EPSG 27700).

2.1 Loading and displaying the GML supply

There are two ways to load the GML supply into QGIS: You can use <u>drag and drop</u> or the <u>Data Source</u> <u>Manager</u>.

2.1.1 Using drag and drop

To load the GML supply using drag and drop:

- I. Open an existing QGIS project or create a new one.
- 2. In the file system on your computer system (for example, in Windows Explorer), select the GML data (.gz file).
- 3. Drag and drop the file directly into the QGIS UI.
- 4. In the Select Items to Add dialog:

If you use multiple screens, this dialog may open on another screen.

- a. Select each required layer or click Select All to select all layers.
- b. Check the Add layers to a group option.

This groups the layers by OSMM Topography Layer tile reference.

c. Click Add Layers.

earch	
tem	Description
V BoundaryLine	LineString (116)
CartographicSymbol	Point (696)
CartographicText	Point (6799)
CopographicArea	Polygon (42874)
V TopographicLine	LineString (116578)
* TopographicPoint	Point (612)
(
Select All Deselect All	

Figure I: QGIS Select Items to Add dialog

The GML data will now display in both the Layers panel and the map area.

2.1.2 Using Data Source Manager

To load the GML supply into QGIS using Data Source Manager:

- I. Open an existing project or create a new one.
- 2. In the Layer menu, click Data Source Manager.



Figure 2: QGIS UI showing Layer > Data Source Manager action

- 3. In the Data Source Manager dialog:
 - a. Select Vector from the data menu on the left.
 - b. In Source > Vector Dataset(s), click '...', navigate to and select the GML on your computer.
 - c. Click Add.

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Bastar	Encoding	Automatic	•
+ Kaster	Source		
Mesh	Vector Dataset(s) C:\Users\JArmstrong\OneDrive - C	Ordnance Survey \Documents\6129541-SU3010.gz	
Point Cloud	▼ Options		
Delimited Text	Consult GML driver help page for detailed explanation	s on options	

Figure 3: QGIS Data Source Manager dialog showing Vector > Source > Vector Dataset(s) field.

4. In the Select Items to Add dialog:

If you use multiple screens, this dialog may open on another screen.

- a. Select each required layer or click Select All to select all layers.
- b. Check the Add layers to a group option.

This groups the layers by OSMM Topography Layer tile reference.

c. Click Add Layers.

Search	
Item	Description
V BoundaryLine	LineString (116)
CartographicSymbol	Point (696)
CartographicText	Point (6799)
CopographicArea	Polygon (42874)
V TopographicLine	LineString (116578)
* TopographicPoint	Point (612)
(
Select All Deselect All Add layers to a group Show system and internal tables	

Figure 4: QGIS Select Items to Add dialog

The data will now display in both the Layers panel and the map area.

2.2 Layer order and rendering

Data is typically grouped by tile reference in the Layers panel. If you open two or more OSMM Topography Layer layers simultaneously (for example, *TopographicArea* and *BoundaryLine*), you may need to reorder the layers to see the data correctly.

You can reorder layers using drag and drop. We recommend the following layer order: CartographicText, CartographicSymbol, TopographicPoint, BoundaryLine, TopographicLine and TopographicArea.



Figure 5: QGIS Layers panel showing recommended layer order

2.3 GML data limitations

Using GML data in QGIS is not always the best option. You should consider converting your data to another format (for example, shapefile) for the following reasons:

- When working with multiple tiles of 5km2 OSMM Topography Layer data, GML data does not always merge seamlessly.
- Rendering performance of GML data in QGIS is not as good as other formats, because GML data cannot be spatially indexed.

The sections that follow show you how to convert GML data to shapefile and how to apply a spatial index to shapefiles.

2.3.1 Converting GML to shapefile

To convert GML to shapefile in QGIS:

1. In the Layers panel, right-click on the layer you want to convert and click *Export* > Save Features As....



Figure 6: QGIS Layers panel showing Export > Save Feature As action

- 2. In the Save Vector Layer as... dialog:
 - a. Format: Select ESRI Shapefile.
 - b. File name: Click ..., navigate to the folder in which you want to store the shapefile, name the file, and click Save.
 - c. Check the Add saved file to map option.
 - d. Click OK.

Format	ESRI Shapefile			•
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Layer name				
CRS	EPSG:27700 - OSGB3	36 / British National Grid	1	•
Encoding		UTF-8		
Save on	ly selected features	their expert ention	2	
Save on	ly selected features fields to export and Name	their export option	s Replace with displayı	ed value
Save on Select	ly selected features fields to export and Name	their export option Type String	s Replace with displaye	ed value
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Save on Select V fid V feat V ver	ly selected features fields to export and Name tureCode sion	their export option Type String Integer Integer	s Replace with displaye Use Range Use Range	ed value

Figure 7: QGIS Save Vector As dialog showing GML to shapefile conversion

You can watch the export progress in the blue progress bar at the bottom of the QGIS UI. When the process is complete, the shapefile layers will display in the Layers panel and the map area.

3. Repeat steps I - 2 above for each layer (for example, *TopographicLine*, *CartographicText...*) that you want to convert.

2.3.2 Applying a spatial index to shapefiles

When working with shapefiles, we recommend you apply a spatial index to the data, particularly when loading large or national sets of data. This significantly improves performance when rendering and panning the data.

To apply a spatial index to a shapefile in QGIS:

1. In the Layers panel, right-click on the shapefile layer you want to index and click *Properties* in the context menu.



Figure 8: QGIS Layers panel showing *Properties* option in the context menu

- 2. In the Layer Properties dialog:
 - a. Select Source in the navigation menu on the left.
 - b. In Geometry click Create Spatial Index.
 - c. Click OK to close the confirmation dialog.
 - d. Click Apply and then OK.

Q Layer Properties — SU3010_	Shapefile — Source	×
QI	▼ Settings	
information	Layer name SU3010_Shapefile	
Source	Data source encoding UTF-8 *	
183 marca	▼ Assigned Coordinate Reference System (CRS)	
Symbology	EPSG:27700 - OSGB36 / British National Grid	
(abc Labels	Changing this option does not modify the original data source or perform any reprojection of features. Rather, it can b used to override the layer's CRS within this project if it could not be detected or has been incorrectly detected.	e
abc Masks	The Processing "Reproject Layer" tool should be used to reproject features and permanently change a data source's CRS.	
SD View	▼ Geometry	
Viagrams	Create Spatial Index Update Extents	

Figure 9: QGIS Layer Properties dialog showing Source > Geometry > Create Spatial Index option

Your shapefile layer will now be spatially indexed; this improves rendering and querying performance.

3. Repeat steps I and 2 above for each layer you want to create an index for (for example, *TopographicLine, CartographicText...*).

3. ArcGIS Pro

The following instructions are based on ArcGIS Pro version 2.8.1 and assume that you have access to and knowledge of the UK Data Loader and the Data Interoperability Extension to convert the supplied GML into a suitable ArcGIS Pro format.

Note, if you do not have access to the UK Data Loader and the Quick Import (Data Interoperability) extension, use the translation tools available in <u>FME</u> or <u>QGIS</u> to convert the GML data to shapefiles, or import it into an ESRI Geodatabase before loading them into ArcGIS Pro.

3.1 Loading and displaying the GML supply using UK Data Loader

The UK Data Loader is an ArcGIS toolbox. It contains a set of tools that primarily allow loading of Ordnance Survey data into an ArcGIS workspace.

If the UK Data Loader is not already installed, we recommend you add the folder containing the toolbox into your documents. More information on installing the UK Data Loader is available in ESRI's <u>UK Data</u> <u>Loader User Guide</u>. This guide also provides instructions for processing Change Only Updates (COU) for OSMM Topography Layer.

Using the UK Data Loader involves two steps: <u>Converting the GML supply</u> and <u>loading the converted file</u> <u>geodatabase</u> into ArcGIS Pro.

3.1.1 Converting the GML supply to file geodatabase

Note: Before you start, you need either an existing file geodatabase (.gdb) or a database connection to load the files into.

To load the GML data into ArcGIS Pro using the UK Data Loader:

I. Open an existing project or create a new one.

You may want to select a basemap for backdrop context.

2. From the View tab, select Catalog View.



Figure 10: ArcGIS Pro UI showing View > Catalog View option

3. In the Catalog view, navigate to the location in which your UK Data Loader toolbox is saved.

You may need to connect to the relevant folder using the Add Folder option in the Insert tab.

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Eccators	🚔 OS MasterMap Water Network Layer	
🔺 🙆 Portal	🚔 OS VectorMap Local	
	🚔 UK Locators	
	🚔 z_resources	
🗈 🔷 ArcGIS Online		
Living Atlas		
▷ ★ Favorites		

Figure 11:ArcGIS Pro UI showing saved UK Data Loader toolbox in Catalog View

4. Open the toolbox, navigate to OS MasterMap Topography Layer > Load OSMM Topography Data, rightclick on the script, and click Open in the context menu.

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Project Catalog Insert	Analysis View	Imagery	Share	Geoprocessin	g
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Favorites		1	Edit Meta	data	
		0	Help		
		P	Properties		

Figure 12: ArcGIS Pro UI showing the Open action in Catalog view

- 5. This will open the Geoprocessing panel in which you can set the parameters for running the script:
 - a. Source Data Folder: Navigate to and select the GML file(s) required.
 - b. Existing Destination Workspace: Navigate to and select the pre-existing file geodatabase (.gdb) folder to load the data into.
 - c. Logging File Folder: Navigate to and select a folder into which to save the log that will be created during data processing.

This is important because any error messages will be captured here. These may help identify issues.

- d. Feature Class / Table Prefix: Enter a prefix for your tables (for example, Topo_).
- e. Create Annotation Line Features: Check this option if it is available and required.

This checkbox option is only available in older versions of ArcGIS Pro/UK Data Loader.



Figure 13: ArcGIS Pro Geoprocessing panel showing Parameters tab options

6. Click Run (Run button) at the bottom of the panel to process the data.

This may take some time, depending on the number of 5km² OSMM Topography Layer tiles being processed.

On completion, the OSMM Topography Layer data will be saved to the destination file geodatabase, which can then be loaded into the workspace by following the instructions in the next section.

3.1.2 Loading and displaying data from the file geodatabase

Having converted your GML data to file geodatabase using the UK Data Loader (or other tools listed in this guide), you can now load the OSMM Topography Layer GDB into your ArcGIS Pro workspace.

To load and display the file geodatabase in an ArcGIS Pro workspace:

1. Open an existing project or create a new one.

You may want to select a basemap for backdrop context.

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2. From the Map tab, select Add Data.



Figure 14: ArcGIS Pro UI showing Map > Add Data option

3. In the Add Data dialog, navigate to and select the file geodatabase (.gdb) containing the OSMM Topography Layer data, and then click *OK*.



Figure 15: ArcGIS Pro Add Data dialog showing selection of the file geodatabase

4. In the selected file geodatabase (.gdb) select the feature classes that you want to load and then click OK.

You can select multiple feature classes at once to save repeating these steps for all the OSMM Topographic Layer features.



Figure 16:ArcGIS Pro Add Data dialog showing selection of the OSMM Topography Layer feature classes

Your OSMM Topography Layer feature classes will now appear in both the Contents panel and map area.

You may need to reorder the layers to see the data correctly. You can reorder layers using drag and drop. We recommend the following layer order: *CartographicText*, *CartographicSymbol*, *TopographicPoint*, *BoundaryLine*, *TopographicLine* and *TopographicArea*.



Figure 17: ArcGIS Pro UI showing OSMM Topography Layer layers in the Contents panel

3.2 Loading and displaying shapefiles

As an alternative to using the <u>UK Data Loader</u>, you can load OSMM Topography Layer shapefiles directly into your ArcGIS Pro workspace. You need to first convert your GML data to shapefile.

Translation tools available in <u>FME</u> and <u>QGIS</u> to convert the GML data to shapefiles.

To load and display shapefiles in an ArcGIS Pro workspace:

1. Open an existing project or create a new one.

You may want to select a basemap for backdrop context.

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2. From the Map tab, select Add Data.



Figure 18: ArcGIS Pro UI showing Map > Add Data option

3. In the Add Data window, navigate to and select the shapefiles (.shp) containing the OSMM Topography Layer data, and then click *OK*.

You can select multiple shapefiles at once to save repeating these steps for all the OSMM Topographic Layer features.

Add Data			×
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🔺 🚔 Project	Name	Туре	Date
Þ 👼 Databases	🚞 Data_Interoperability_Output		
Folders	GDB		
🖌 🙆 Portal	🚞 UKDataLoader		
	🖶 BoundaryLine.shp	Shapefile	
	😰 CartographicSymbol.shp		
	CartographicText.shp		
	😰 TopographicArea.shp		
ArcGIS Online	TopographicLine.shp		
Eiving Atlas	TopographicPoint.shp		
a 📜 Computer			
▶ 📌 Quick access			
Þ 🤳 This PC			

Figure 19: ArcGIS Pro Add Data dialog showing selection of the OSMM Topography Layer shapefiles

Your OSMM Topography Layer shapefiles will now display in both the Contents panel and map area.

You may need to reorder the layers to see the data correctly. You can reorder layers using drag and drop. We recommend the following layer order: *CartographicText*, *CartographicSymbol*, *TopographicPoint*, *BoundaryLine*, *TopographicLine* and *TopographicArea*.



Figure 20: ArcGIS Pro UI showing OSMM Topography Layer layers in the Contents panel

4. ArcMap

These instructions are based on ArcMap version 10.8.1. and assume you have set the default coordinate reference system to British National Grid (EPSG 27700).

Note: if your ArcMap is older than version 10.0, or if you do not have access to the Quick Import (Data Interoperability) extension, use the translation tools available in <u>FME</u> and <u>QGIS</u> to convert the GML data to shapefiles.

4.1 Loading and displaying the GML supply using the Quick Import tool

You can import GML data into ArcMap using the Quick Import tool that converts the GML into file geodatabase (.gdb).

Note: Due to the large file size, some 5km² tiles (especially within larger cities) may take time to process.

To load GML data into ArcMap:

1. Open ArcCatalog and click and 🔯 (ArcToolbox icon) in top toolbar to open the ArcToolbox.

🗿 ArcCatalog - Toolboxes	
File Edit View Go Geoprocessing Customiz	ze Windows Help
🔄 🖆 📾 🗊 🛍 🗙 🏭 🏢 🎛 Q 🞼	🔽 🔁 🖓 📮 🤅 🔍 🔍 🖉 🎯 🖛 🔶 🖉
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Catalog Tree 4 ×	Conte you can access geoprocessing
Folder Connections	tools and toolboxes.
Ioolboxes Ioolboxes Ioolboxes Ioolboxes Ioolboxes	Press F1 for more help. boxes Folder

Figure 21: ArcMap ArcCatalog panel highlighting the ArcToolbox icon

I. In ArcToolbox, expand Data Interoperability Tools and click Quick Import.



Figure 22: ArcMap's ArcToolbox showing Data Interoperability Tools > Quick Import option

2. In the Quick Import dialog, click ... (next to the Input Dataset field), and navigate to and select your OS MasterMap Topography GML data.

 — ^

Figure 23: ArcMap Quick Import dialog

- 3. In the Specify Data Source dialog:
 - a. Format: GML SF-0 (Geography Markup Language Simple Features Level SF-0 Profile) will be detected automatically.
 - b. Coord. System: Enter British_National_Grid or click ... and select it in the dialog.
 - c. Click OK.

Specify	Data Sou	urce			×
Reader					
Format:	GML SF-0) (Geography Markup	Language Simple Feature	es Level SF-0 Profile)	~
Dataset:	OSMM To	pography Layer Gett	ing Started Guide\5_Data	\GML\5690395-SU3510.gz"	💌
Paramet	ers	Coord. System:	British_National_Grid		
Help	•			ОК	Cancel

Figure 24: ArcMap Specify Data Source dialog

- 4. In the Quick Import dialog:
 - a. Output Staging Geodatabase field: Click 🖆 (file browser icon), navigate to and name the file geodatabase (.gdb) folder, and click *Save*.
 - b. Click OK to start the Quick Import.

Quick Import	_		>	×
Input Dataset				~
5690395-SU3510 [GMLSF]				
Output Staging Geodatabase				
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			for an and	
				~
				~

Figure 25: ArcMap Quick Import dialog showing example input and output information

When the import process is complete, a message will display in ArcCatalog.

To display the GML data in ArcMap:

- 1. Open an existing project or create a new one.
- 2. In the top toolbar, click (Add Data icon).

🔇 Untitled - ArcMap				
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🗞 🔍 😓 🗓	Add data	new data to the n frame.	nap's active	
≝ Layers	Tip: you wind	You can also drag map from the Ca dow.	data into atalog	
1				8

Figure 26: ArcMap UI showing Add Data action

- 3. In the Add Data dialog:
 - a. Navigate to the file geodatabase created in the previous procedure.

If the relevant folder does not display, click 🖴 (Connect to Folder icon) and navigate to the file geodatabase folder from there.

b. Select the layers you want to load.

You can select multiple layers at the same time to save repeating these steps for each layer in the file geodatabase.

c. Click Add.

Add Data		×
Look in: 📋	Data_Interoperability_topo.gdb 🗸 🏠 🕼 🚺 🗮 🕶 📔 🖆 🗊 🛙	5
BoundaryL Cartograph A Cartograph Topographi Topographi Topographi	ne icSymbol icText cArea cLine cPoint	
Name:	BoundaryLine; CartographicSymbol; CartographicText; Top Add	
Show of type:	Datasets, Layers and Results \lor Cancel	

Figure 27: ArcMap Add Data dialog showing selected OSMM Topography Layer file geodatabase layers

Your geodatabase layers will now display in both the Table of Contents panel and the map area.

4.2 Loading and displaying shapefiles

As an alternative to using <u>ArcMap's Quick Import tool</u> (previous section), you can convert your GML data to shapefile using <u>FME</u> and <u>QGIS</u>, and then add the shapefiles directly to ArcMap.

To load shapefiles into ArcMap

- 1. Open an existing project or create a new one.
- 2. In the top toolbar, click 🔄 (Add Data icon).

Q Untitled - ArcMap File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Image: Imag		
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Image: Im	🕽 Untitled - ArcMap	
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Table Of Contents 4 ×	able Of Contents $P \times$	
Image: Second	: 🔍 😔 📮 🗄	Add new data to the map's active data frame.
Iayers Tip: You can also drag data into your map from the Catalog window.	≝ Layers	Tip: You can also drag data into your map from the Catalog window.

Figure 28: ArcMap UI showing Add Data action

- 3. In the Add Data dialog:
 - a. Navigate to the shapefiles you want to load.

If the relevant folder does not display, click ¹ (Connect to Folder icon) and navigate to the file geodatabase folder from there.

b. Select the shapefiles that you want to load.

You can select multiple layers at the same time to save repeating these steps for each shapefile.

c. Click Add.

Add Data		×
Look in: 🔁	C:\Users\JArmstrong\OneDrive 🗸 🏠 🎲 🖬 🗸	📫 🖆 🗊 🚳
backups ArcGIS Custom Off FME Outlook File PostgreSQL BoundaryLi Cartograph Cartograph	Image: Second system Image: Second system Image: Second system Image: Second system Inc.shp Image: Second s	Connect To Fold
Name:	BoundaryLine.shp; CartographicSymbol.shp; Cartographic]	Add
Show of type:	Datasets, Layers and Results $\qquad \lor$	Cancel

Figure 29: ArcMap Add Data dialog showing selected OSMM Topography Layer shapefile layers

Your shapefiles will now appear in both the Table of Contents panel and the map area.

You may need to reorder the layers to see the data correctly. You can reorder layers using drag and drop. We recommend the following layer order: *CartographicText*, *CartographicSymbol*, *TopographicPoint*, *BoundaryLine*, *TopographicLine* and *TopographicArea*.



Figure 30: ArcMap Table Of Contents showing OSMM Topography Layer layers

5. Cadcorp SIS Desktop Express

These instructions are based on Cadcorp SIS Desktop Express 9.0.2511 and assume you have set the default coordinate reference system to British National Grid (EPSG 27700). These instructions also work for the fully licenced version of Cadcorp SIS Desktop.

5.1 Loading and displaying the GML supply

There are two ways to load the GML supply into Cadcorp SIS Desktop: You can use <u>drag and drop</u> or <u>add</u> <u>and overlay</u>.

5.1.1 Using drag and drop

To load and display the GML supply using drag and drop:

- I. Open an existing project or create a new one.
- 2. In the file system on your computer system (for example, in Windows Explorer), select the GML data (.gz file).
- 3. Drag and drop the file directly into the Map area in Cadcorp SIS Desktop.

Data processing will begin automatically. You can monitor the progress by watching the spinning blue circle in the bottom left of the UI.

When processing is complete, the data will display in the Maps panel and Map area.

Cadcorp produces their own OS MasterMap Topography styling, which automatically styles your OMMM Topography data. If you cannot see your data, zoom to > 1:4,000 scale and it should become visible.



Figure 31:Cadcorp SIS Desktop showing loaded OSMM Topography Layer GML data

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5.1.2 Adding an overlay

To load and display the GML supply by adding an overlay:

- I. Open an existing project or create a new one.
- 2. From the Home tab, click Add Overlay.



Figure 32: Cadcorp SIS Desktop UI showing Home > Add Overlay action

- 3. In the Overlay Types dialog:
 - a. Click Files in the left navigation menu.
 - b. Click File in the options on the right.
 - c. Click Next>.



Figure 33: Cadcorp SIS Desktop Overlay Types dialog with the Files > File option selected

- 4. In the File Browser dialog:
 - a. Navigate to and select the GML data (.gz file) you want to load.
 - b. Click Finish.

Browse for on to dataset loads	e or more data	aset files to a	dd. Press the Config	ure button to	control how each
Deckton b					
Desktop •					
New Folder					E .
Name 🔺	Size	Type	Modified		
6129541-SU3010	14,626 KB	GZ File	18/01/2023 13:28	:33	
6129541-SU3015	5,621 KB	GZ File	18/01/2023 13:28	3:33	
6129541-SU3510	26,089 KB	GZ File	18/01/2023 13:28	:41	
₩6129541-SU3515	5 15,877 KB	GZ File	18/01/2023 13:28	:38	
File name: 6129541-5	5U3010.gz			Ordnance Surve	ıy (GB) MasterMa 👻
				Einich	Configure

Figure 34: Cadcorp SIS Desktop File Browser dialog showing OSMM Topography Layer GML files

Data processing will begin automatically. You can monitor the progress by watching the spinning blue circle in the bottom left of the UI.

When processing is complete, the data will display in the Maps panel and Map area.

Cadcorp produces their own OS MasterMap Topography styling, which automatically styles your OMMM Topography data. If you cannot see your data, zoom to > 1:4,000 scale and it should become visible.



Figure 35: Cadcorp SIS Desktop showing loaded OSMM Topography Layer GML data

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6. MapInfo Professional

These instructions are based on MapInfo Professional 2019 and assume you have set the default coordinate reference system to British National Grid (EPSG 27700).

Note: While MapInfo Professional can open GML files without prior translation, for performance and compatibility reasons, we recommended you use the Universal Translator built into MapInfo Professional versions 12.5 onwards to convert the GML supply to MapInfo TAB files prior to loading the data.

The sections below provide instructions for both working with GML data and converting to MapInfo TAB.

6.1 Loading and displaying the GML supply

To load and display the GML supply directly in MapInfo Professional:

- 1. Open an existing workspace or create a new one.
- 2. From the Home tab, click Open > Universal Data.

6		陶 暾	•						
PRO	н	OME	TABLE	MAP	SP	ATIAL	LAYOUT	RASTER	
1	î	1				🖺 Paste 🔏 Cut	द	i	
Open ~	Open Table	Save Workspa	Save	Close		S Undo	New Document *	Tool Windows *	Recover Windows
Worksp	oaces, T	ables, Pro	ograms						
2				Ę	\Rightarrow		6	Ĩ	
Oper Workspi	n ace W	Add Vorkspace	Table	In	nport	Universa Data	I Database Table	Program	
Base M	Base Maps								
			Open	Open external data.			1		
Aeria	10	Roads	Pre	ess F1 for	more he	elp.	GeoMap		

Figure 36: MapInfo Professional UI showing Home > Open > Universal Data action

- 3. In the Specify Data Source dialog:
 - a. Format: Select GML (Geography Markup Language).
 - b. Dataset: Click ..., and navigate to and select the GML file (.gz) in the file browser.
 - c. Click OK.

leader						
Format:	GML (G	eography Markup Language)	~			
Dataset:	C:\Users\JArmstrong\Documents\SU4010.gz					
Parame	ters	Coord. System: Read from source				

Figure 37: MapInfo Professional Specify Data Source dialog

4. In the Select Layers dialog, select the layers you want to load and click OK.

Select Layers				×
Open Layer Constraints Constr	Name bint 7 ISite 7 Ilection nt 7	* * × □	File Name RoutingPoint.tab FunctionalSite.tab FeatureCollection.tab AccessPoint.tab	OK Cancel < Back
				Check All
File Name: Apply to Selecte	d Layers	*		
Apply to All Lay Directory: Preferred View:	Use of C:\User	color inforn rs\JArmstri atic	mation from dataset Do not open empty layers ong\Documents\	Help

Figure 38: MapInfo Professional Set Layers dialog

Your GML data will now display in the Maps panel and map area.

Note: The data is un-styled. See <u>Related documentation</u> for guidance on styling OSMM Topography Layer data.

6.2 Converting GML to MapInfo TAB

To convert the GML supply to MapInfo TAB in MapInfo Professional:

- 1. Open an existing workspace or create a new one.
- 2. In the Home tab, click Open > Universal Data.



Figure 39: MapInfo Professional UI showing Home > Open > Universal Data action

3. In FME Quick Translator, click Translate.



Figure 40: MapInfo Professional UI showing FME Quick Translator actions

- 4. In the Set Translation Parameter dialog:
 - a. Reader Format: Select GML (Geography Markup Language).
 - b. Reader Dataset: Click ..., and navigate to and select the GML file in the file browser.
 - c. Format: Select MapInfo TAB (MAPINFO).
 - d. Dataset: Click ..., and navigate to and select the folder you want the translated data saved to.
 - e. Click OK.

2.0					
Reader					
Format:	GML (Geo	graphy Markup Langu	iage)		\sim
Dataset:	g\OneDrive	- Ordnance Survey\D	ocuments\6129	9541-SU3515.gz'	• • •
Parame	ters	Coord. System:	Read from so	urce	
Multiple	Source Data	set Options			
Multiple	Source Data ge source d	set Options stasets to one destina	stion		
Multiple () Mer () Sep	Source Data ge source d arate destin	set Options stasets to one destina ation for each source	stion dataset		
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Multiple Mer Sep Writer	Source Data ge source d arate destin	set Options stasets to one destina stion for each source	stion dataset		
Multiple Mer Sep Writer Format:	Source Data ge source d arate destin MapInfo T	set Options stasets to one destina ation for each source AB (MAPINFO)	stion dataset		~
Multiple Mer Sep Writer Format: Dataset:	Source Data ge source d arate destin MapInfo T "C:\Users\J	set Options stasets to one destina stion for each source AB (MAPINFO) Armstrong\OneDrive	otion dataset - Ordnance Sur	vey\Documents	•

Figure 41: MapInfo Professional showing FME Set Translation Parameters dialog

You can watch the translation progress log in the FME Quick Translator. It will take some time; a single 5km tile of OSMM Topography Layer in GML format takes approximately 30 seconds. When the process is complete, a message similar to the example below will display.

۴	FME	Quick	Transla	ator					
File	Log	Help							
(Tra	nslate	Stop	P Save	Сору Сору	EQ Find	EC Find Next	W Word Wrap		
196 197					Feat	ures Read	Summary		
198 199 200 201 202 203 204 205	Bound: Carto Carto Carto Topog: Topog: Topog: Queryi	aryLine yraphics raphics raphics raphics raphics Extent	Symbol Text rea ine oint						123 609 6814 47858 132978 784 1
206 207 208	Total	Feature	es Read						189167
209					GML to	MAPINFO S	statistics		
211 212					Input	Features 1	ransformed		
213	Bounda	aryLine	teml ty	oetxnl	linetà	coursev0f1	Position+5A	couracyOfPosition	123
215	Carto	graphics	Symbol+	xml_typ	e+xml	point+Char	geDate+&Ch	angeDate+ChangeHi	609
216	Carto	raphic	lext+xm	1_type+	xml_te	xt+Anchorl	Position+6A	nchorPosition+Cha	6814
217	Topog	-aphicA:	rea+xml	_type+x	ml_are	a+Calculat	edAreaValu	e+&CalculatedArea	47858
218	Topogi	-aphicLi	1netern	_type+x	mi_iin	intelocuracy	OTREIGHTAD	Non-Optimethoone	1329/8
220	Cuery!	Extente	wal two	e+xml a	-02				1
221									
222	Total	Input B	Feature	e Trane	formed	1			189167
224									
225				τ	ransfo	rmed Feat	ares Output		
226	Bounda	aryLine.	mapinf	o type+	mapinf	o polyline	+Accuracy0	Position+thcoura	123

Figure 42: MapInfo Professional UI showing FME Quick Translator log

5. You can now close the FME Quick Translator.

You can now load the translated data into MapInfo Professional as TAB format using the instructions provided in the following section.

Note: If translating multiple tiles of OSMM Topography Layer using the above method, the files will be automatically appended into a single table, avoiding the need to merge tables. However, duplicate features are not removed automatically. See <u>Deleting duplicate entries from tables</u> for guidance on how to handle this.

6.3 Loading the converted MapInfo TAB files

To load the converted MapInfo TAB files in MapInfo Professional:

- 1. Open an existing workspace or create a new one.
- 2. From the Home tab click *Open > Table*.



Figure 43: MapInfo Professional UI showing Home > Open > Table action

- 3. In the file browser:
 - a. Files of type: Select MapInfo (*.tab).
 - b. Navigate to the folder in which you stored the converted MapInfo TAB files and select the layers you want to open.
 - c. Click Open.

🧲 Open				×
Look in:	Documents		✓ Ø Ø ₽ □ ▼	-
Tables Directory Remote Tables Directory Import Files Directory Workspaces Directory	Name BoundaryLi Cartograph Cartograph QueryExten Topograph Topograph Topograph	^ ne nicSymbol nicText t ticArea icArea icIne icPoint		Status (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)
	<			>
	File name:	BoundaryLine	~	Open
	Files of type:	MapInfo (*.tab)	~	Cancel
	Preferred View:	Automatic Create copy in MapInfo f	v	Help
MapInfo Places Standard Places	s			

Figure 44: MapInfo Professional Open dialog

Your MapInfo TAB data (.tab) will now display in the Maps panel and map window.

Note: The data is un-styled. See <u>Related documentation</u> below for guidance on styling OSMM Topography Layer data.

6.4 Merging multiple Tab files

In MapInfo Professional it is possible to merge the elements of two TAB files into one new table using the append function.

Note: Appending only works for data tables of the same type AND for two TAB files at a time. Because OS MasterMap Topography Layer data comprises six individual tables, we recommended that you merge two or more tiles during the <u>conversion from GML to TAB process</u>.

To merge two TAB tables:

- 1. Follow the steps in <u>Converting GML to MapInfo TAB</u> above for both files.
- 2. Select one of your tables in the Explorer panel.
- 3. In the Home tab click Append Rows.

2 2 5 5 5 5 s								
PRO HOME TABLE MAP	SPA	TIAL	LAYOU	JT RA	STER			
Export		\square	0	Clear	Ċ	IJ	щ	R
New Open R Close 🕏 Universal Tr	ranslator	Select	SQL	💽 Find	* Update Column	Append Rows		
Content			Selecti	ion			Edit	
Explorer			Apper Atta ano stru	nd Rows sch records ther table v cture.	from one ta with the sam	ble to	raphicAre	

Figure 45: MapInfo Professional UI showing Home > Append Rows action

- 4. In the Append Rows to Table dialog:
 - a. Append Table: Select the table that will be appended.
 - b. to Table: Select the table to append to
 - c. Click OK.

Append Rows to Table				
Append Table:	Тород	raphicArea		~
to Table:	TopographicArea			
O	<	Cancel	Help	Ê.

Figure 46: MapInfo Professional Append Rows to Table dialog

The data from one table will now have been appended into the other. You will need to save the table to retain the appended data. See below for instructions on how to do this.

To verify which table contains the appended data:

I. Right-click a table in the explorer and click Browse Table in the context menu.

Explorer	* * ×	TopographicArea
🕹 🗙 🔂 🤴 Search	Q	TOID
▲ Maps		5000005297343173
4 🔣 TopographicArea_2,Topog	graphic 🥷	5000005295562626
 Cosmetic Layer 	0 B	5000005295562630
✓	1 6 6	0001000016266902
	0 6 3	5000005214104017
	Browse Table	
	Extents of Selected Zoom to Nearest Ti Layer Properties Rename Label Font Clear Custom Label	Objects le Server Level
1 layer selected	Add Display Overric Create Heatmap	le
Grouped : Recent A Native TopographicArea 2	Add Label Override Select All Make Other Lavers	Non-selectable
TopographicArea	thate other cayers	5000005295397515

Figure 47: MapInfo Professional UI showing Browse Table action

The total number of rows in the table displays in the bottom bar; this value of will be considerably larger for the table that included the appended rows.

	1000002027055171
	5000005295606990
	1000002027054686
	1000002027054691
	1000002027054690
	100002027054685
	1000002027054689
	4
records 1 - 45 of 42874	

Figure 48: MapInfo Professional UI showing number of table rows

To save the table:

- 1. Select the table containing the appended rows in the explorer.
- 2. From the Table tab click Save > Save Table.

As an alternative, you can use the Save Copy As action to additionally retain the original, unmerged table.

4 金属陶泉。				
PRO HOME TABLE MAP SPAT	TIAL	LAYOUT R	ASTER	
New Browser Base Copy As Jt	R Select	Selection	Update Apper Column Rov	end ws
Explorer 🗢 🖛 >	< 🗐	TopographicAre	ea Browser 💊 🕷	
🕈 🗶 🕆 🦆 Search 🛛 🔾		TOID	FeatureCode	Ve
▲ Maps		50000052973431	73 10,021	
4 💀 TopographicArea_2,Topographic 🭕		50000052955626	26 10,021	
Cosmetic Layer 🧷 🙉		50000052955626	30 10,021	
TopographicAre 🖉 🚱 🚳		00010000162669	02 10,021	
		50000052141040	17 10,172	
		50000052573306	96 10,056	

Figure 49: MapInfo Professional UI showing Table > Save > Save Table action

3. In the Save Table confirmation dialog click Save to confirm your action.

Save Table	×
Save Tables:	
TopographicArea	Save
	Cancel
	Help

Figure 50: MapInfo Professional Save Table dialog

Your table will now contain the data for both original TAB files; you can verify this by opening the table to check the contents.

Note: While the files are now merged, duplicate features (resulting from "hairy tiles") are not removed automatically See <u>Deleting duplicate entries from tables</u> for guidance on how to handle this.

6.5 Deleting duplicate entries from tables

There are several ways to delete duplicate entries from tables MapInfo Professional. Please refer to the MapInfo Professional documentation for guidance:

- <u>How to find All Records With Duplicate Values in a Column in MapInfo Pro (precisely.com)</u>. This article describes how to use SQL queries.
- <u>User Guide</u>: Search for the Delete Duplicates Tool.

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7. FME Desktop

These instructions are based on FME Desktop 2022.1.1.

7.1 Loading and displaying the GML supply

To load and display the GML supply in FME Desktop 2022.1.1.

- 1. Open an existing workspace or create a new one.
- 2. From the Reader tab click Add Reader...

R NOI	NE → N	ONE (Untitled) -	FME Workbench	2022.1				
File	Edit	View	Readers	Transformers	Writers	Run	Tools	Help	
			😫 Add	Reader		Ctrl+/	Alt+R		K
New	Oper	n Sav	Impo	ort Feature Types				Redo	Select
Navigat	tor	8	Upda	te Feature Types					
	Transf	ormer:	Enab	le/Disable Featur	re Types				
	Bookn	narks	Delet	te Readers					
63	User P	arame	Dele	ie neddersin					
> 10	FME S	erver .	(🖯 Add	Reader as Resou	rce				
[8]	Works	pace						·	
× (@	Works	pace				_			

Figure 51: FME Desktop UI showing Readers > Add Reader action

- 3. In the Add Reader dialog:
 - a. Format: Select OGC GML (Geography Markup Language).
 - b. Dataset: Click ..., and navigate to and select the GML file (.gz) in the file browser.
 - c. Coord. System: Select ESPG: 27700 (British National Grid).
 - d. Click OK.

🔁 Add Reader	×
Reader	
Format: OGC GML (Geography Ma	rkup Language) 🗸 🗸 🗸
Dataset: eDrive - Ordnance Survey	Documents\6129541-SU3010.gz" 💌
Parameters Coord. System	: EPSG:27700 ~
Workflow Options	
Individual Feature Types	○ Single Merged Feature Type
Help 🔻	OK Cancel

Figure 52: FME Desktop Add Reader dialog

4. In the Select Feature Types dialog select the required layers and click OK.

This dialog may take a while to load. You can watch the progress in the green bar at the bottom left of the FME window.

😤 Select Feature Types	>	<
Feature Type List		
☑ 📑 CartographicText	^	
CartographicSymbol		
🗹 📑 TopographicPoint		
🖾 📑 BoundaryLine		
🖾 📑 TopographicLine		
🗹 📑 TopographicArea		
	~	
Q Filter	■ Select all □ Sorted	
Γ	OK Cancel]

Figure 53: FME Desktop Select Feature Types dialog

When processing is complete, your features will appear as readers in the FME workspace.

5. Right-click one of the feature readers and click Connect Inspector in the context menu.

The Inspector will automatically connect to the reader.

	▶.	
BoundaryLine	Run	•
CartographicS X	Cut	Ctrl+X
CartographicT	Copy Delete	Ctrl+C Del
	Duplicate on Writer	•
► TopographicA	Disable Enable Only This Feature Type	Ctrl+E
► TopographicLi	Connect Inspector	Ctrl+Shift+I
	Connect Logger	Ctrl+Shift+L

Figure 54:FME Desktop UI showing a selected feature type reader and the Connect Inspector action in the context menu

The Inspector will automatically connect to the reader.

- 6. Click the Inspector and then click the Run to this icon (green triangle above the inspector).
- 7. In the Translation Parameter Values dialog click Run.

BoundaryLine BoundaryLine	
😤 Translation Parameter Values	×
User Parameters Source Geography Markup Language (GML) File(s): ents\6129541-SU3015.gz*	. •
Save As User Parameter Default Values	
Options Presets Run	Cancel

Figure 55: FME Desktop UI showing selected feature type inspector and Translation Parameter Values dialog

You can watch the loading progress in the Translation Log below the main workspace.

When the run command has completed, the GML table and features will display in the Visual Preview area below the main workspace.

Ta	ble									Graphics								
B	undaryLine							~	Columns	80 0		۲	G	ð	a, e		Q	
	TOID	FeatureCode	Version	VersionDate	Theme	ThemeCount	AccuracyOfPosition	ChangeD	ate ^	2D 3D	Slideshow	Orbit	Select	Pan Zo	om In Zoon	Out Zoom	Selected	Zoom Exter
1	5000005295645	10128		1 20220513	Administrative		1 2.5m	20220513					~	my	1			
2	1000001338115	10136		5 20220513	Administrative		1 2.5m	20220513	1			r		ć.	/			
3	5000005257871_	10128		2 20220513	Administrative		1 2.5m	20220513			/			E.	/			
4	5000005295645	10128		1 20220513	Administrative		1 2.5m	20220513							2/			
5	1000001338115_	10136		9 20220513	Administrative		1 2.5m	20220512							X			
6	5000005295645	10128		1 20220513	Administrative		1 2.5m	20220513						(Ener V	~		
7	5000005295645	10128		1 20220513	Administrative		1 2.5m	20220513						1		2		
8	5000005241362	10131		1 20190116	Administrative		1 2.5m	20190115						1		3		
9	1000001338117_	10131		3 20040221	Administrative		1 2.5m	20040209								F		
1	1000001338117	10136		4 20040221	Administrative		1 2.5m	20040209	>					1		3	1	
Q				in any column		~			59 row(s)						X: 433849	6080 Y: 115	403.1959 E	PSG:27700

Figure 56: FME Desktop UI showing GML table and visual graphic in the Visual Preview area

8. Repeat steps 5 to 7 above for each layer (feature type) you want to view.

7.2 Converting GML to shapefile

You can use FME to convert GML data to other geospatial and non-spatial formats. The instructions below demonstrate how to convert GML data to shapefile, but you can adapt them for different formats.

To convert GML to shapefile in FME Desktop:

- I. Repeat Steps I to 4 of the previous section (Loading and displaying the GML supply).
- 2. From the Writers tab click Add Writer...



Figure 57: FME Desktop UI showing Writers > Add Writer action

- 3. In the Add Writer dialog:
 - a. Format: Select ESRI Shapefile.
 - b. Dataset: Click ..., and navigate to and select the folder in which to save your translated data.
 - c. Coord. System: Select ESPG: 27700 (British National Grid).
 - d. Click OK.

ᅱ Add Writer			×
Writer			
Format: Esri Shap	pefile		~
Dataset: UArmstro	ng\OneDrive - Ordnance Surve	y\Documents"	
Parameters	Coord. System: EPSG:2770	0	~
Add Feature Type(5)		
Shapefile Definition	n: Copy from Reader		~
Help 🔻		ОК	Cancel

Figure 58: FME Desktop Add Writer dialog

4. In the Select Feature Type dialog select the layers you want to convert and click OK.

😤 Select Feature Type	×
 BoundaryLine [6129541-S] CartographicText [612954 TopographicArea [612954 TopographicLine [6129541 CartographicSymbol [6129 TopographicPoint [612954 	U3015 [GML]] 1-SU3015 [GML]] 1-SU3015 [GML]] I-SU3015 [GML]] 9541-SU3015 [GML]] I1-SU3015 [GML]]
Q Filter	☑ Select all □ Sorted OK Cancel

Figure 59: FME Desktop Select Feature Type dialog

This dialog may take a while to load. You can watch the progress in the green bar at the bottom left of the FME UI.

5. Connect each reader to its matching writer by dragging the grey triangle on the reader to the red triangle on the writer.



Figure 60: FME Desktop UI showing OSMM Topography Layer feature types connected to writers

6. In the main toolbar click \triangleright (Run icon) to start the translation.



Figure 61: FME Desktop UI showing connected feature types and writers ready to be run

7. In the Translation Parameter Values dialog, check that the source and destination file locations are correct and click *Run*.

rameters	
Geography Markup Language (GML) File(s): - Ordnance Survey\Documents\6129541-SU	J3015.gz" 💌
Destination Esri Shapefile Folder: https://www.instrong/OneDrive-OrdnanceSurvey/Doc	cuments" 🔻
; User Parameter Default Values	
As User Parameter Default Values	

Figure 62: FME Desktop Translation Parameter Values dialog

You can watch the conversion progress in the Translation Log below the main work area. When the conversion is complete (indicated by a message similar to the one below), both the GML files and Shapefiles will be available in your chosen folders and in the navigator.

Transla	tion Log						
•	0 Errors \ominus 🕞	🛕 11 Warnings 🕘 🕕 Information 🛛 🖞 🧮 🛱 🧟					
	Transformer	Message					
175			-				
176		Features Written Summary					
177			-				
178		BoundaryLine 59)				
179		CartographicSymbol 590)				
180		CartographicText 1984	1				
181		TopographicArea 9872	2				
182		TopographicLine 27060)				
183		TopographicPoint 518	3				
184							
185		Total Features Written 40083	3				
186							
187							
188		-~	~-				
189		-~ Feature caches have been recorded at every stage of the translation.	~-				
190		-~ To inspect the recorded features, ~-					
191		-~ click the feature cache icons next to the ports.	~-				
192		-~	~-				
193							
194		Translation was SUCCESSFUL with 8 warning(s) (40083 feature(s) output)					

Figure 63: FME Desktop UI showing Translation Log

8. Astun Technology GML/KML Loader®

You can use the Astun Technology Loader to convert GML 2.1.2 data to other geospatial and non-geospatial formats.

This is a free, open-source loader for geographic data in GML and KML formats. It is written in Python and uses OGR 1.9. source data to output to any format supported by OGR, for example, shapefile and MapInfo TAB.

The loader was last updated in September 2022. Installation files and guides for the loader, including configuration examples, are available from the <u>AstunTechnology/Loader</u> (<u>https://github.com/AstunTechnology/Loader</u>) GitHub repository.

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9. Related documentation

You can find additional information and documentation on the <u>OS MasterMap Topograph Layer Product</u> page (<u>https://www.ordnancesurvey.co.uk/business-government/products/mastermap-topography</u>).

We recommend you read the following guides:

- OS MasterMap Topygraphy Layer Overview
- OS MasterMap Topygraphy Layer Technical Specification
- Getting Started with GeoPackage
- Getting Started with Vector Tiles
- OS MasterMap Topygraphy Layer Styling Getting Started Guide
- OS MasterMap Topygraphy Layer Standard Styling Specification