ORDNANCE SURVEY GB

OS MASTERMAP SITES LAYER™ – GETTING STARTED GUIDE

Version history

Version	Date	Description
1.1	04/2016	Minor updates.
2.0	10/2022	Introduction of GeoPackage and vector tiles formats to the product. Formatting updates to the document. Software versions, instructions, and screenshots reviewed and updated for Sections 2 to 6. Annex containing product support links added.

Purpose of this document

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

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Contact details

OS website 'Contact us' page (https://www.ordnancesurvey.co.uk/contact-us)

Contents

1. Obtaining OS MasterMap Sites Layer data

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

1.1 Product supply and formats

OS MasterMap Sites Layer is supplied as an online download in the OS Data Hub (https://osdatahub.os.uk/).

You can order OS MasterMap Sites Layer data for either all of Great Britain or by 5km^2 tile. In the 5km^2 tiles, features are not clipped at tile edges, resulting in what is known as 'hairy' tiles.

The product is available in the following formats:

- GeoPackage
- Vector tiles (MBTiles)
- GML (3.2.1)

All formats contain three layers: Functional Site, Access Point, and Routing Point.

1.2 File naming conventions

The GML file naming conventions for OS MasterMap Sites Layer are:

- **National sets**

  National datasets are grouped into the seven themes within Sites Layer: air transport, education, medical care, rail transport, road transport, water transport, and utility and industrial.

  File names follow this pattern: *<product>_<theme>_<area>.gz*, for example, *osmmsites_airt_england.gz*.

- **Tiled data**

  Tiled datasets are provided in 5km^2 tiles. Each tile includes all themes present in that tile.

  Files names follow this pattern: *<5k tile ID>.gz*, for example, *HP5000.gz*.

1.3 Using GeoPackage and vector tile formats

For instructions on how to load the GeoPackage or vector tile supply, please refer to these PDF guides:

- *Getting Started with GeoPackage*
- *Getting Started with Vector Tiles*

You can download both guides from the OS MasterMap Sites Layer Product Support page of the OS website (https://www.ordnancesurvey.co.uk/business-government/tools-support/mastermap-sites-layer-support).
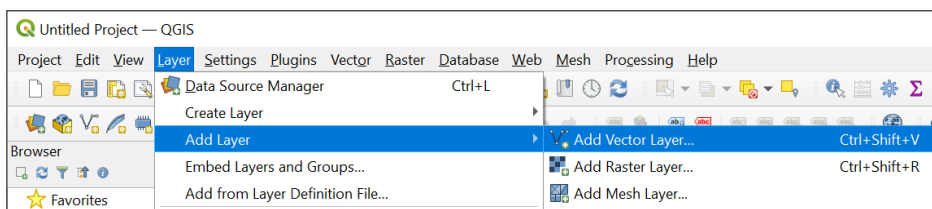
2.   QGIS

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).

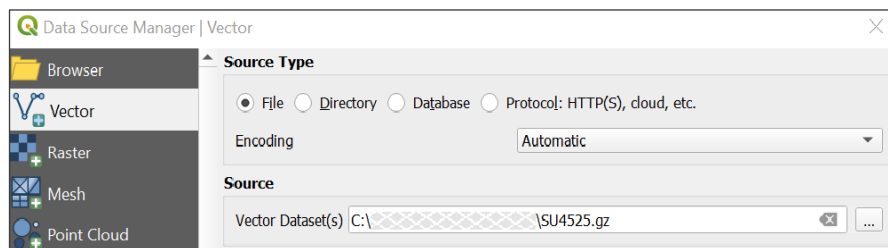## 2.1   Loading and displaying the GML supply

To load and display GML data in QGIS:

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

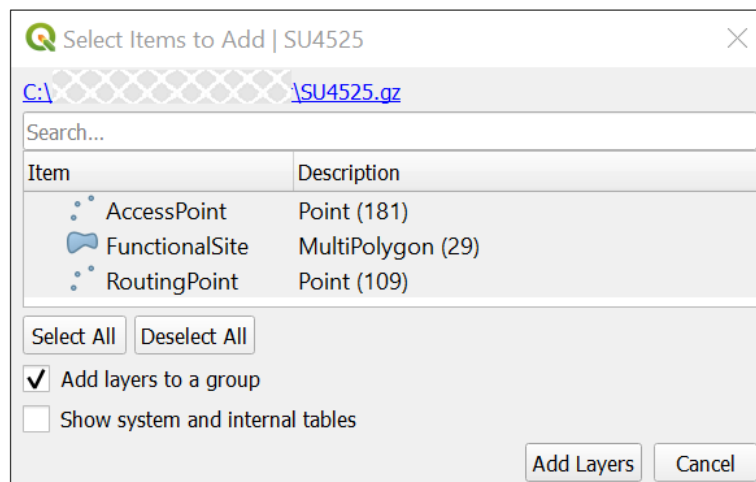2. In Layer, click *Add Layer > Add Vector Layer*.

3. In the Data Source Manager dialog:

    a. Vector > Source > Vector Dataset(*s)*: Click …, navigate to and select the GML file on your computer.
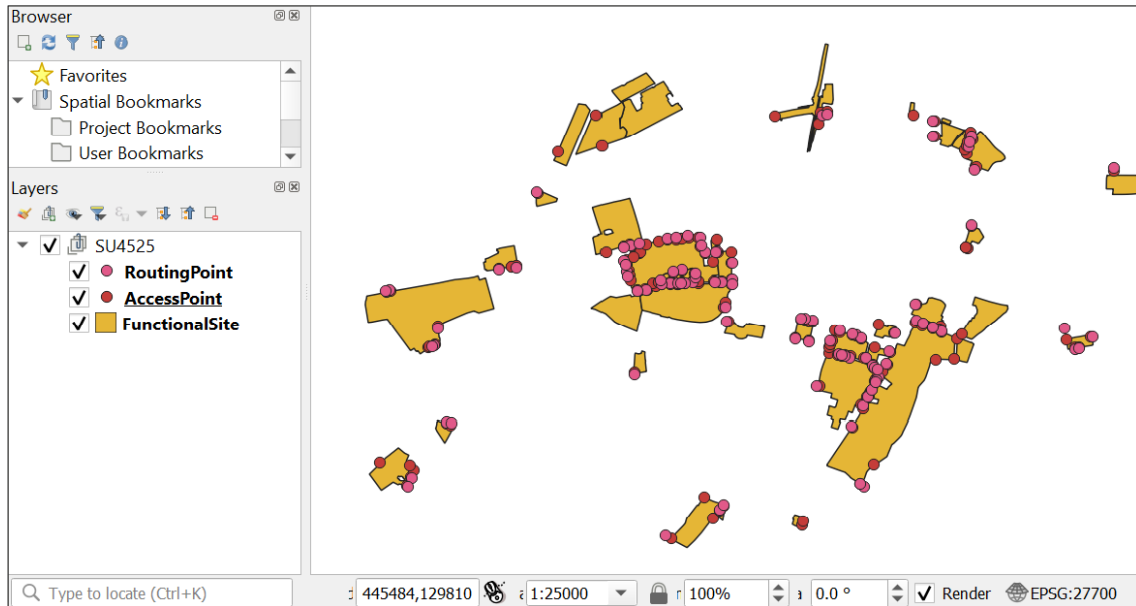
    b. Click *Add*.

    c. In the Select Items to Add dialog, select one or more site layers and click *Add Layers*.

4. Close Data Source Manager.

Your GML data now displays in both the Layers panel and map area. The data is un-styled and will look similar to the following image:


Note:

- Layers panel:
  - Data is typically grouped by tile reference.
  - If you open both the point (*AccessPoint* and *RoutingPoint*) and polygon (*FunctionalSite*) layers, you may need to reorder the layers to see the data in the map area. Use drag and drop to do this.

- If you are dealing with multiple tiles of 5km² OS MasterMap Sites Layer data, consider converting your data to another format (for example, shapefile) as GML data does not always merge seamlessly.

- Rendering performance of GML data in QGIS is not as good as other formats (for example, shapefiles), 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.
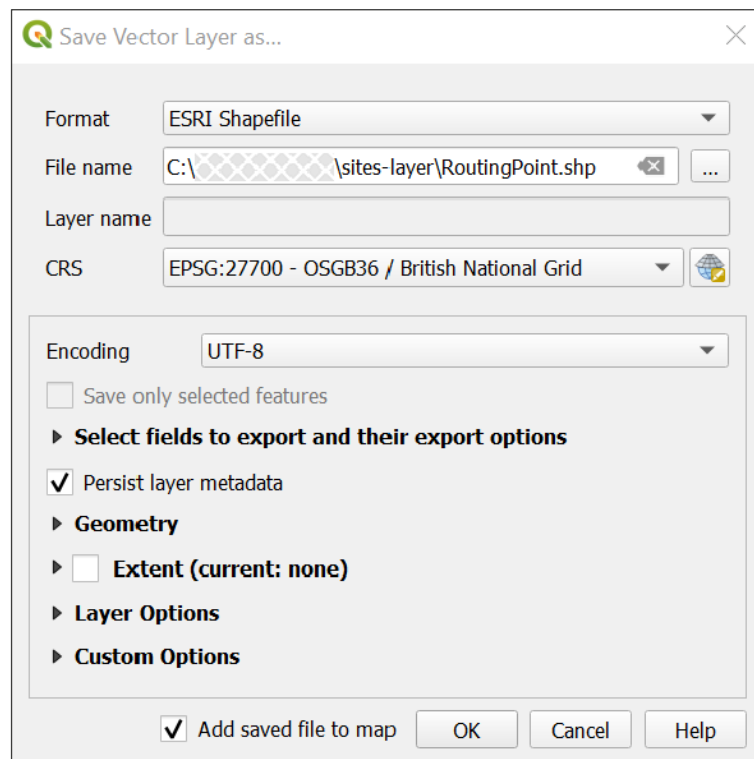
2.2   Converting GML to shapefile

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....*
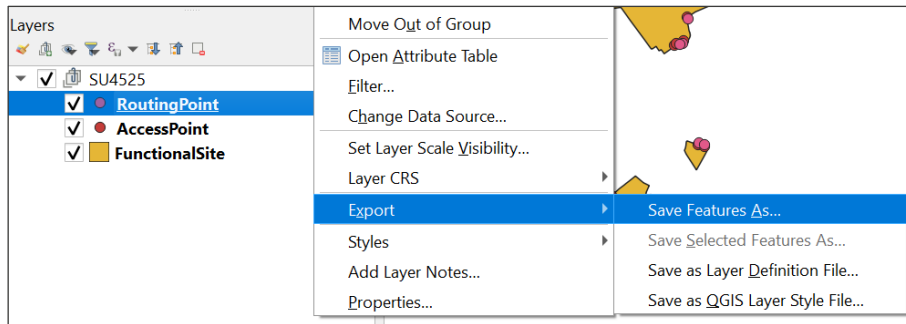
2. In the Save Vector Layer as… dialog:

    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. Click *OK.*

> *When you click OK, QGIS creates a shapefile from the exported GML file and saves it to the selected folder.*

3. Repeat steps 1 and 2 for each layer you want to convert. For example, for the other layers of the 5km² OS MasterMap Sites Layer data.

2.3   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.
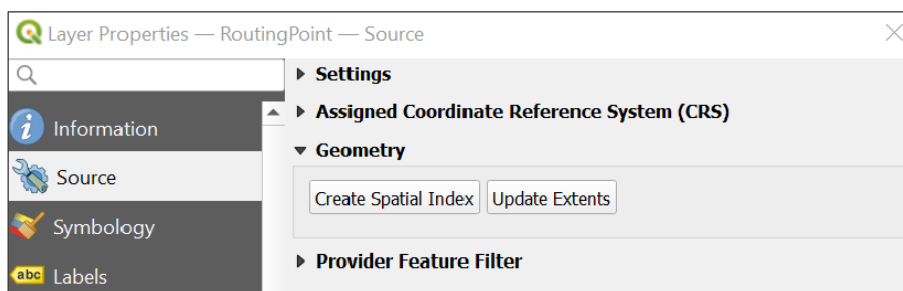
To apply a spatial index to a shapefile in QGIS:

1. In the Layers panel, right-click on the layer you want to index and click *Properties.*
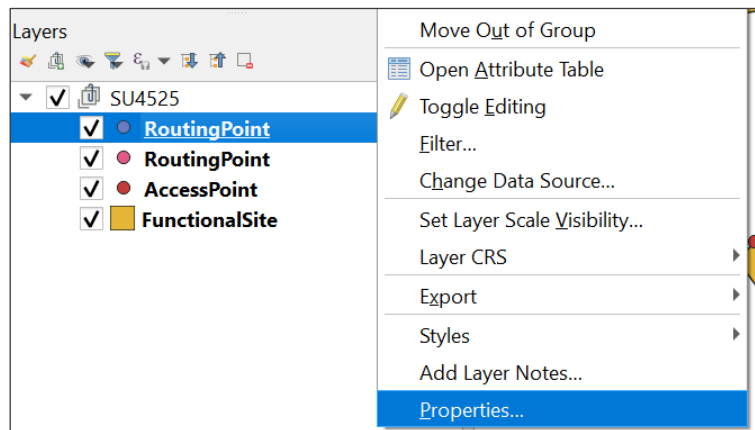
2. In the Layer Properties dialog:

    a. *Source > Geometry*: Click *Create Spatial Index* and then click *OK* when the process is complete to close the success confirmation dialog.

    b. Click *OK*.

3.   Cadcorp SIS Desktop

These instructions are based on Cadcorp SIS Desktop version **9.0** and assume you have set the default coordinate reference system to British National Grid (EPSG 27700). The instructions are also valid for the free, read-only version, Cadcorp SIS Desktop Express.

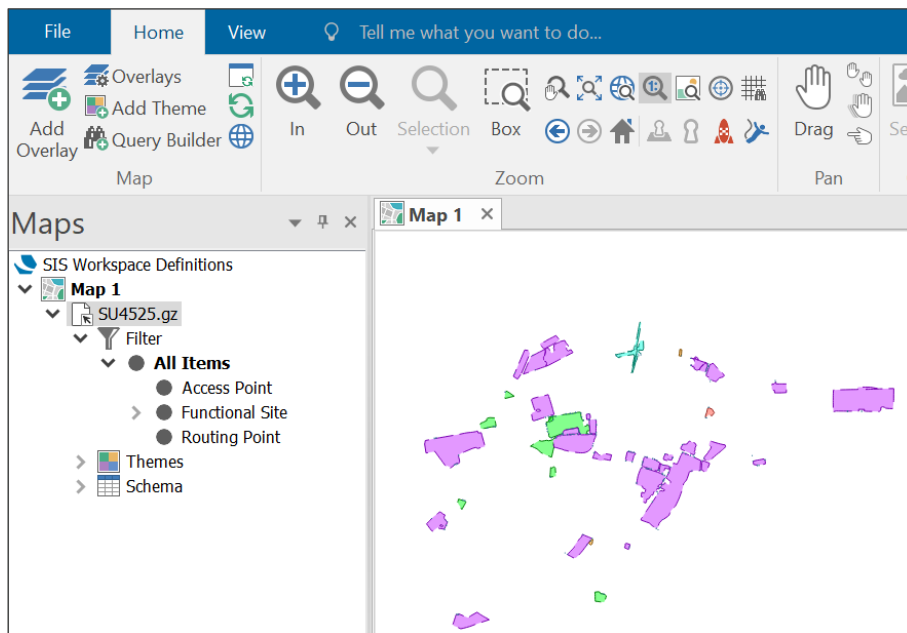## 3.1   Loading and displaying the GML supply

To load and display GML data in Cadcorp SIS Desktop:

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

2. In *Home*, click *Add Overlay*.

3. In the Overlay Types dialog:

    a. Files: Select *File* and click *Next*.
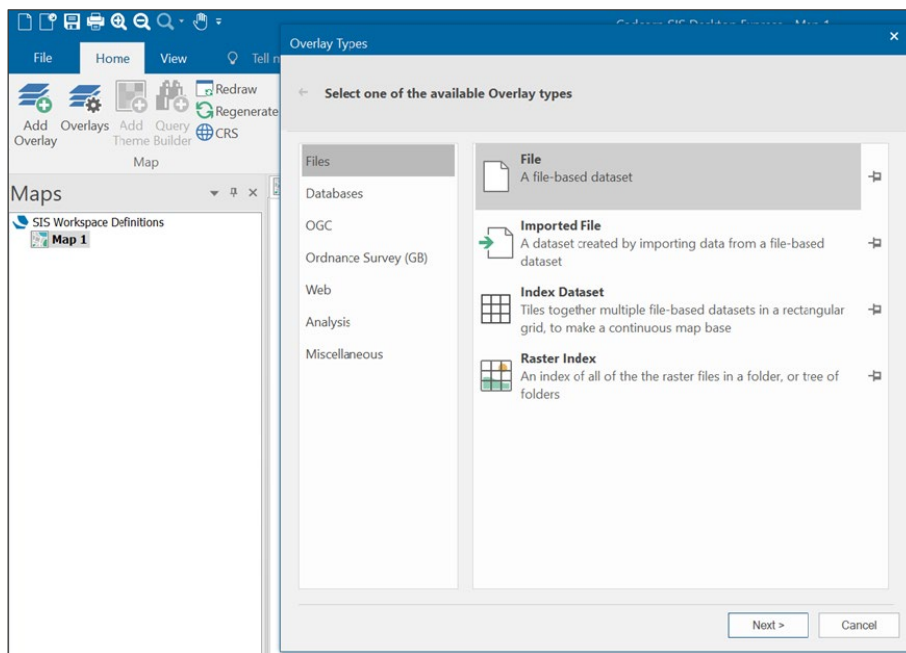
    b. Navigate to and select the file on your computer and click *Finish*.

Your GML data now displays in both the Maps panel and map area. The data is un-styled and will look similar to the following image:
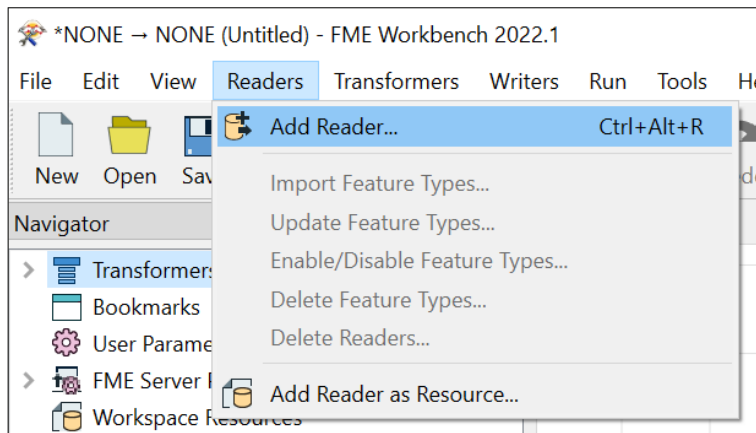
4.   FME Desktop

These instructions are based on FME Desktop version 2021.1.

4.1   Loading and displaying the GML supply

To load and display GML data in FME Desktop:

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

2. In *Readers,* click *Add Reader.*

3. In the Add Reader dialog:

    a.   Format: Select *OGC GML (Geography Markup Language).*

    b.   Dataset: Click …, navigate to and select the GML file on your computer.

    c.   Coord. System: Optionally, select *EPSG:27700.*
         FME should detect the correct system automatically.
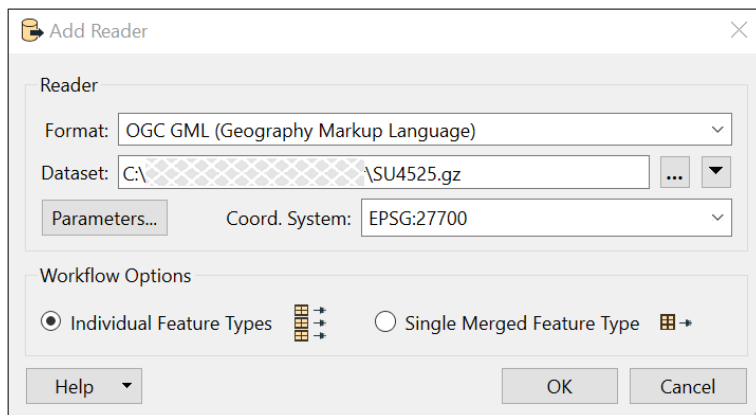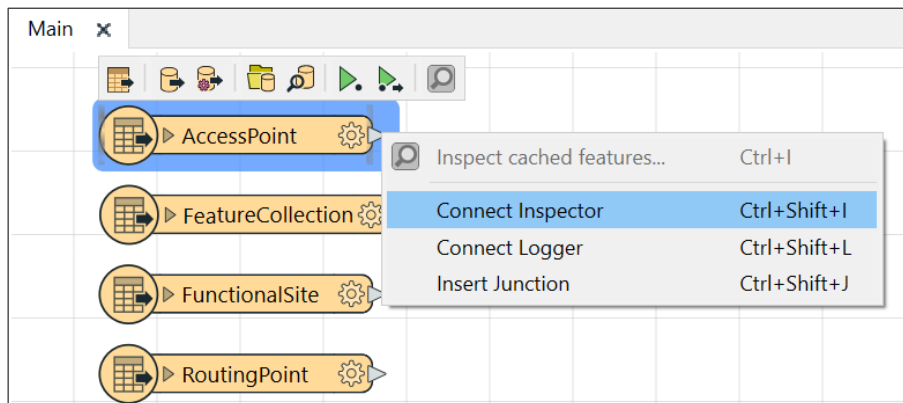
    d.   Click *OK.*

4. In the Select Feature Types dialog, select the layers (feature types) you want to load and click *OK*.

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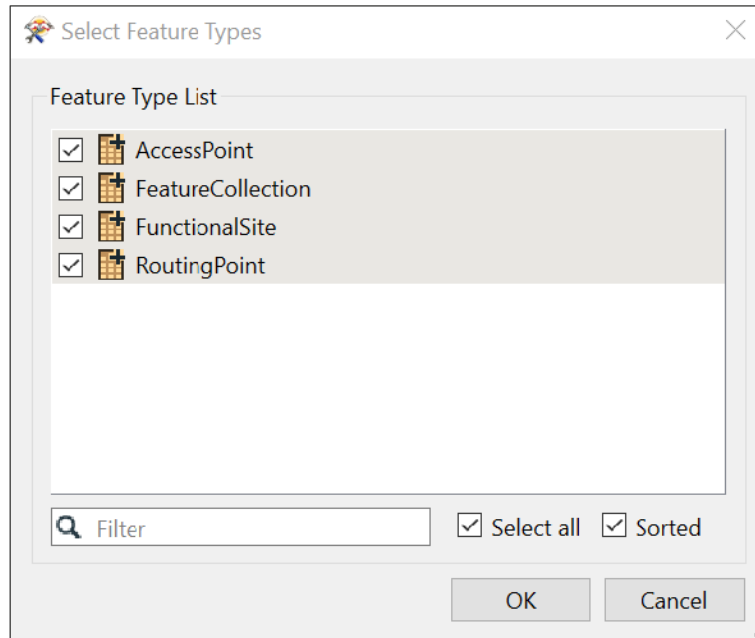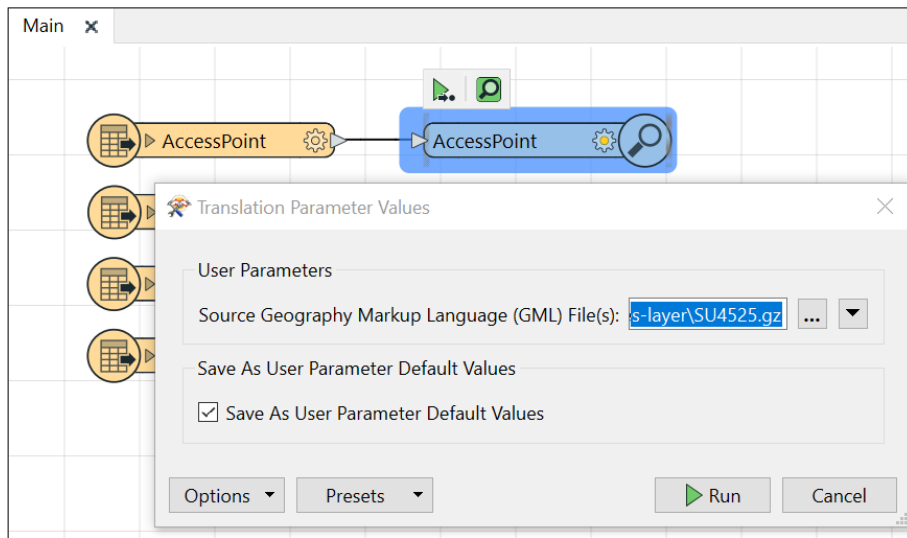

A set of readers (matching the feature types your selected) displays in the main work area.
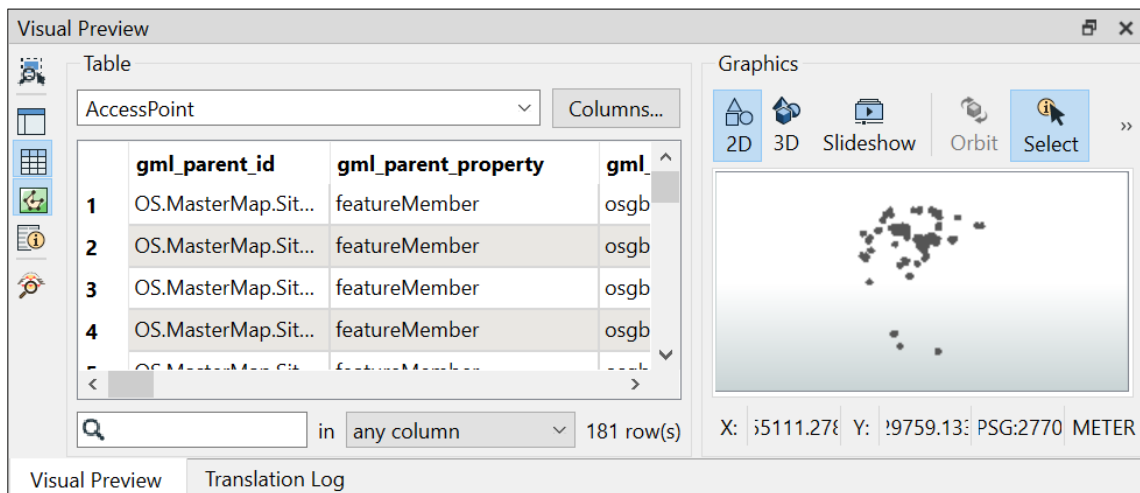
5. Right-click a reader and click *Connect Inspector*.

An inspector automatically connects to the reader.

6. Click the green *Run To This* icon (triangle above the inspector) and then click *Run* in the Translation Parameter Values dialog.

*A table and graphical preview of the GML data displays below the main work area when the Run command completes.*

7. Repeat steps 5 and 6 for each layer (feature type).

4.2   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 to shapefile, but you can adapt them for different formats.

To convert GML to shapefile in FME Desktop:

1. Open an existing workspace or create a new one.
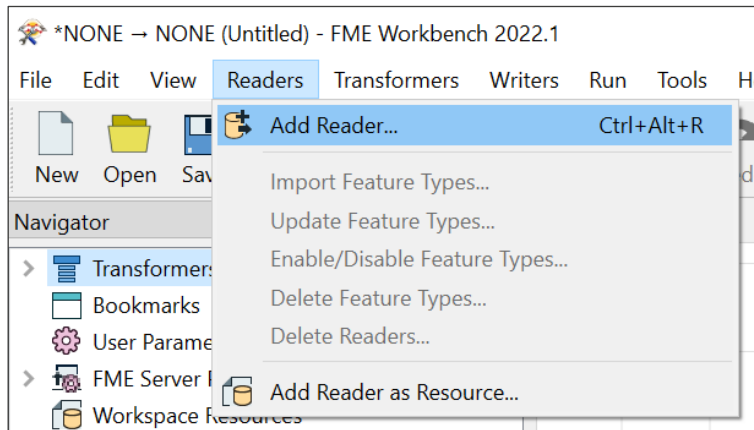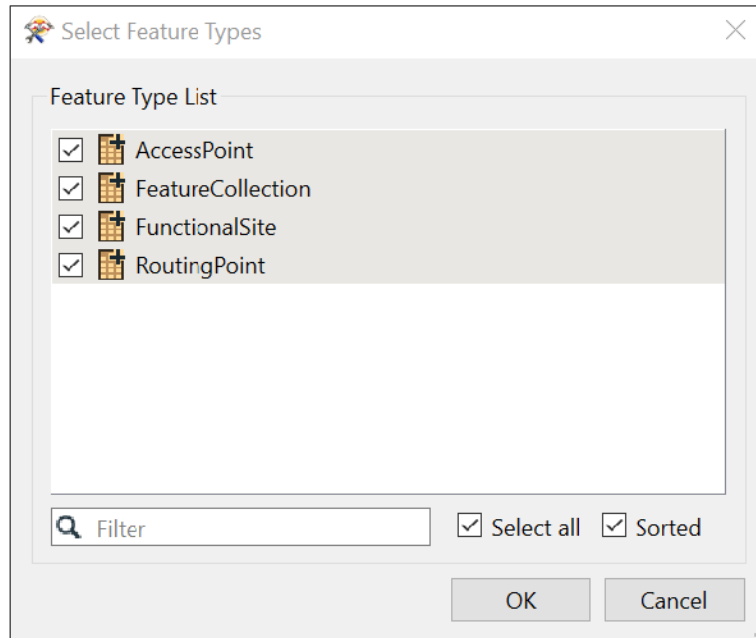
2. In *Readers*, click *Add Reader…*

3. In the Add Reader dialog:

    a. Format: Select *OGC GML (Geography Markup Language)*.

    b. Dataset: Click …, then navigate to and select the GML file on your computer.

    c. Coord. System: Optionally, select *EPSG:27700*.

        FME should detect the correct system automatically.
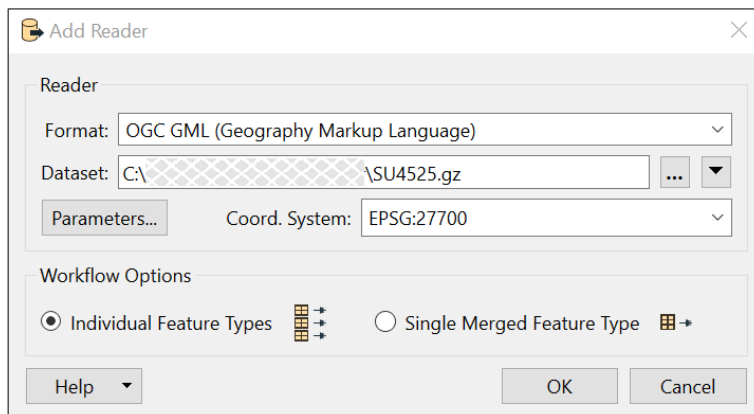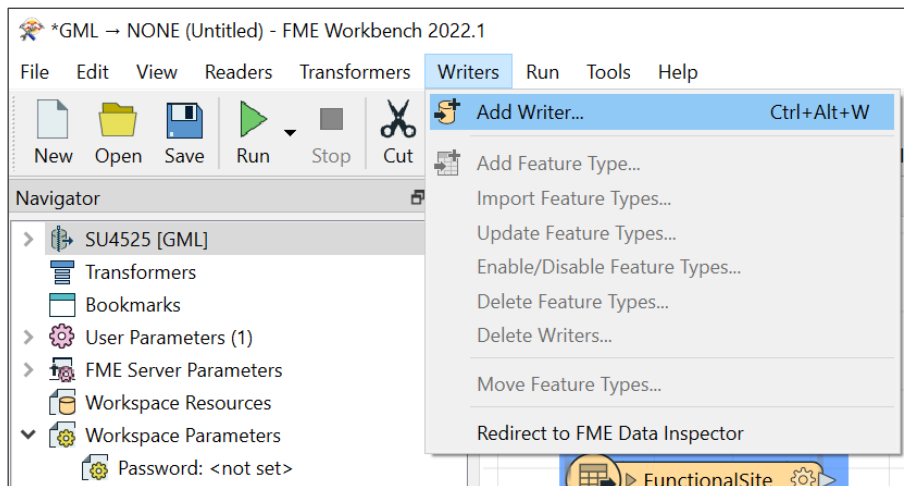
    d. Click *OK*.

4. In the Select Feature Types dialog, select the layers (feature types) you want to load and click *OK*.

   Note: 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.
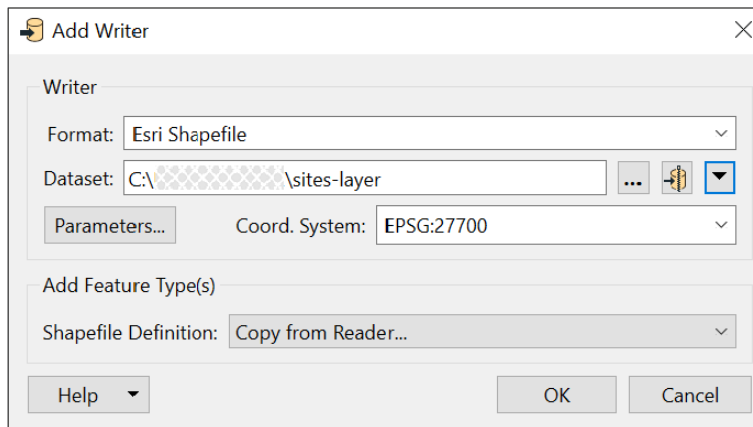

   A set of readers (matching the feature types you selected) displays in the main work area.

5. In *Writers*, click *Add Writer…*

6. In the Add Writer dialog:

    a. Format: Select *Esri Shapefile*.

    b. Dataset: Click …, then navigate to and select the folder in which you want to save your translated data.

    c. Click *OK*.

7. In the Select Feature Types dialog, select the feature types (layers) you want to convert, 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 UI.
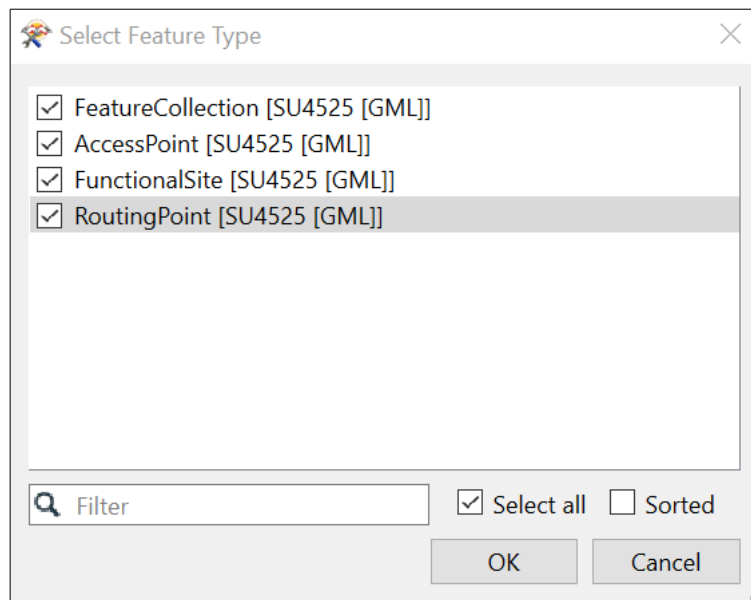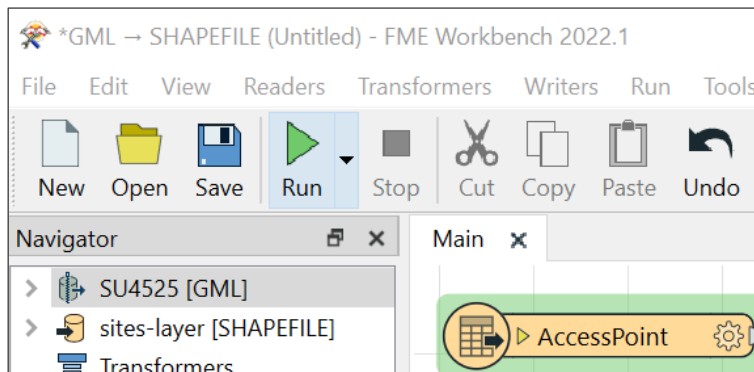

A set of writers (matching the feature types you selected) displays in the main work area to the right of their matching readers.
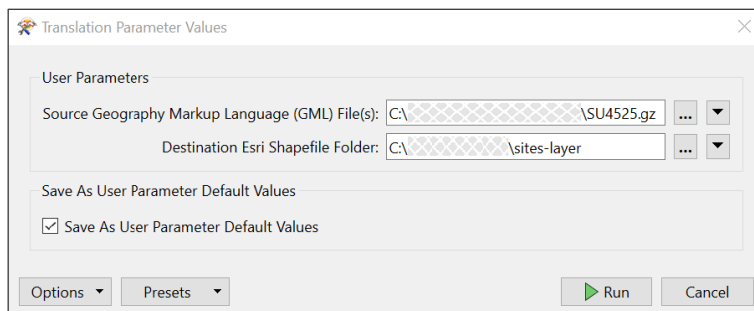
8. Connect each reader to its matching writer by dragging the grey triangle on the reader to the red triangle on the writer.
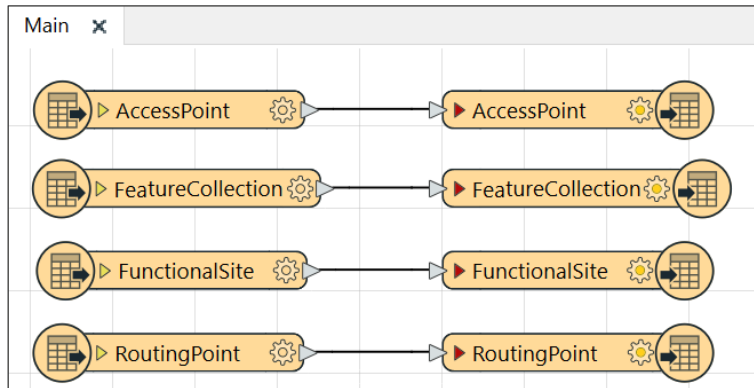
9. Click the green arrow in the top bar to run the workspace.

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

You can watch the conversion progress in the Translation Log below the main work area.

When the conversion is complete, both the GML files and shapefiles will be available in the file system on your computer and in the FME Navigator panel.

5. ArcGIS ArcMap

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

Note: If your ArcMap is older than version10.0, or if you do not have access to the Quick Import (Data Interoperability) extension, use the translation tools available in FME or QGIS (see previous sections for instructions) to convert the GML data to shapefiles before loading them into ArcMap.

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

You can import GML data into ArcMap using the Quick Import tool. The imported data will be un-styled.

Note: Due to the large file size, some 5km² grid tile imports (especially within larger cities) may take time to process.
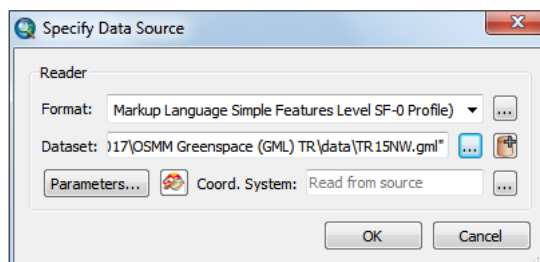
To load GML data in ArcMap:

1. In the top bar, click the *ArcToolbox* icon.

2. Expand *Data Interoperability Tools* and double-click *Quick Import*.
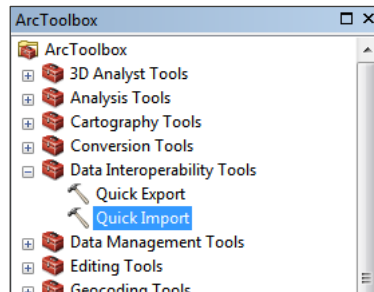
3. In the Quick Import dialog:

   a. Input Dataset: Click … to open the Specify Data Source dialog:

      i) Format: Select *GML SF-0 (Geography Markup Language Simple Features Level SF-0 Profile)*.

      ii) Dataset: Click …, then navigate to and select the GML file on your computer.
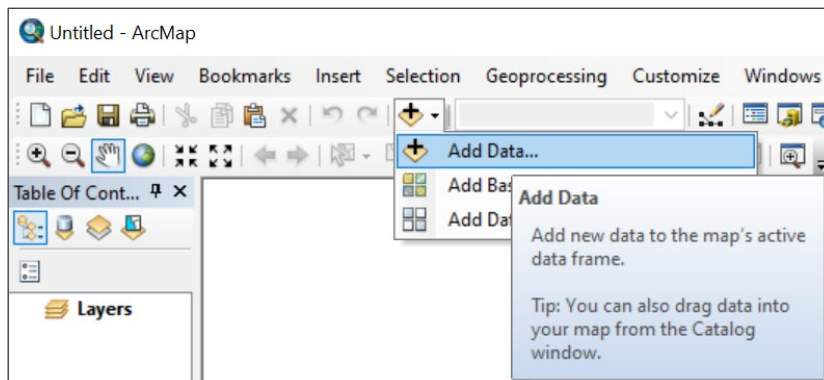
      iii) Click *OK*.

b. Output Staging Geodatabase: Click the folder icon, navigate to and select the output folder on your computer.

c. Click *OK*.
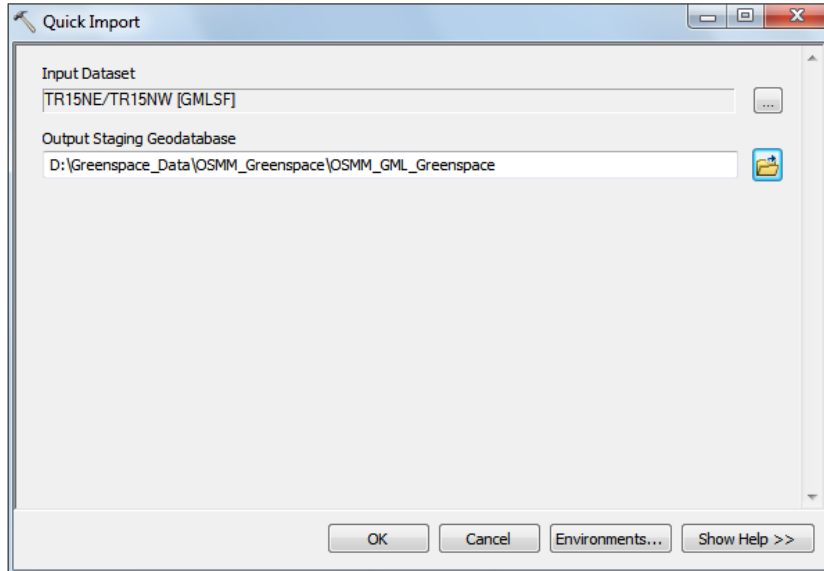
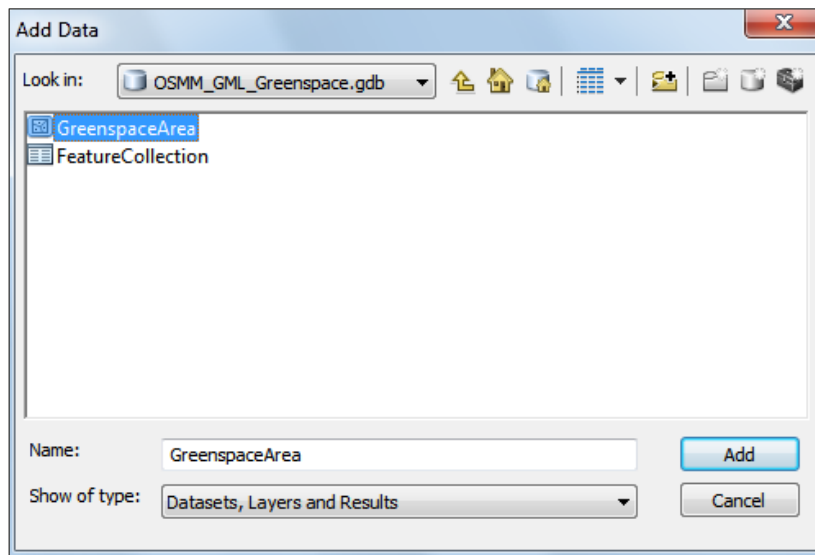*The Quick Import tool creates a new geodatabase and imports the data into it.*
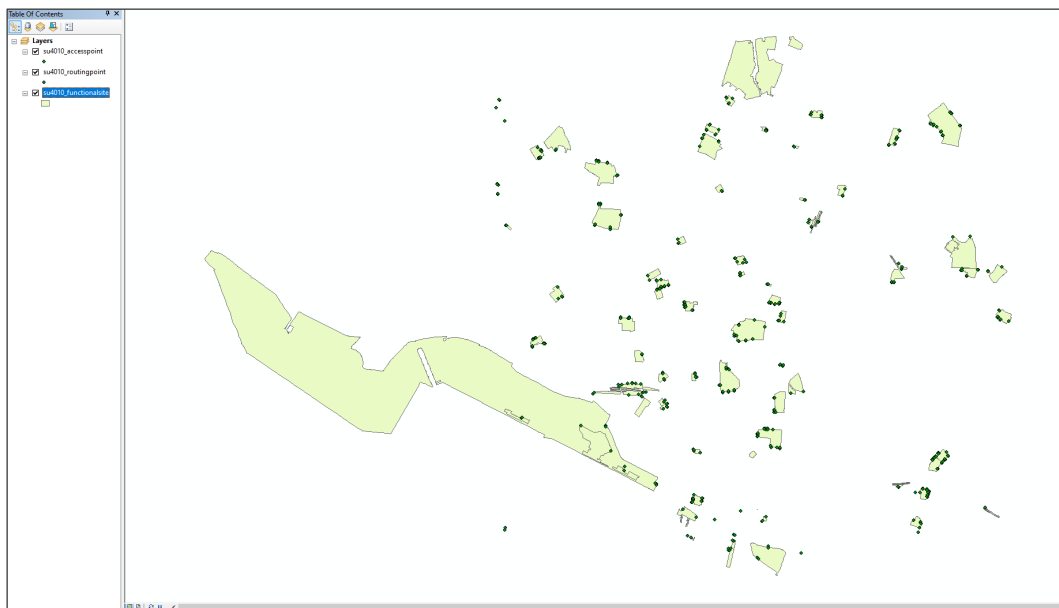
To display the GML data in ArcMap:

1. Click *Add Data* in the tool bar.

2. In the Add Data dialog, select the file geodatabase (created in the previous procedure) on your computer and click *Add*.

Your GML data now displays in the Layers panel and map area. The data is un-styled and will look similar to the following example:

5.2   Loading and displaying shapefiles

As an alternative to using ArcMap's Quick Import tool (previous section), you can convert your GML data to shapefile using QGIS or FME, and then add it directly to ArcMap. There are instructions on how to do this in previous sections of this guide.

To load and display shapefiles in ArcMap:

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

2.   In the top bar, click *Add Data*.

3.   In the Add Data dialog, select the shapefile you want to load, and click *Add*.

     Note: If the required folder does not display in the tree, click the Connect To Folder icon and navigate to the folder from there.

4.   Repeat steps 2 and 3 to load the additional shapefiles (*AccessPoint* and *RoutingPoint*) that make up each 5km² tile of OS MasterMap Sites Layer.

     Your data now displays in the Layers panel and map area. The data is un-styled and will look similar to the following example:

6. MapInfo Professional

These instructions are based on MapInfo Professional version 16.0 and assume you have set the default coordinate reference system to British National Grid (EPSG 27700).

Note: While MapInfo Professional can open GML 3.2.1 files without prior translation, for performance and compatibility reasons, we recommended you use the universal translator in MapInfo to convert the GML supply to MapInfo .TAB files prior to loading the data.

The sub-sections below provide alternative instructions for working with GML data in MapInfo Professional.
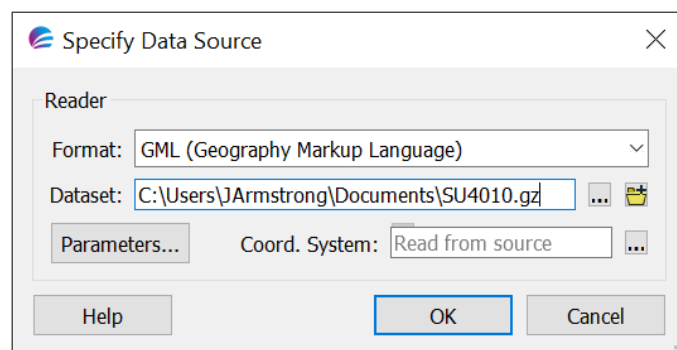
6.1 Loading and displaying the GML supply

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

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

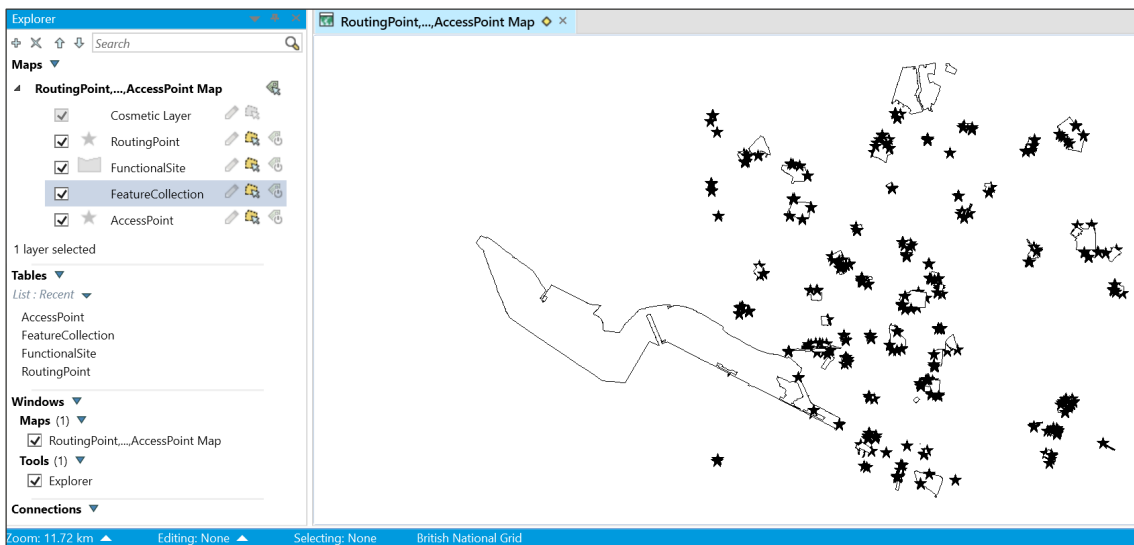2. In *Home*, click *Open > Universal Data*.
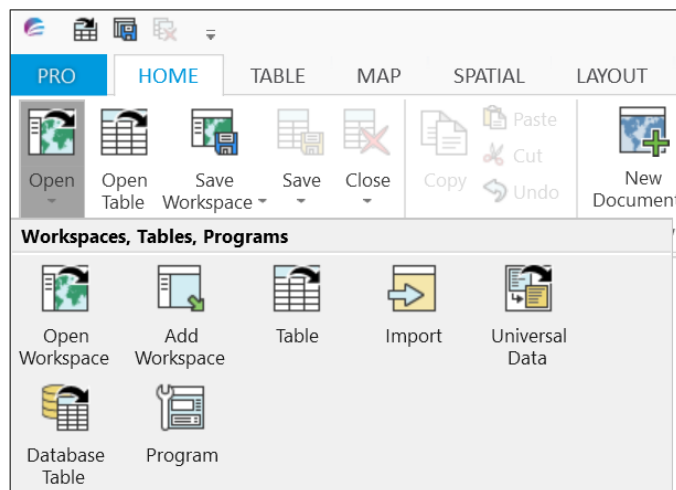
3. In the Specify Data Source dialog:

   a. Format: Select *GML (Geography Markup Language)*.

   b. Dataset: Click …, navigate to and select the GML file on your computer.

   c. Click *OK*.

4. In the Select Layers dialog, select the layers you want to load, and click *OK*.
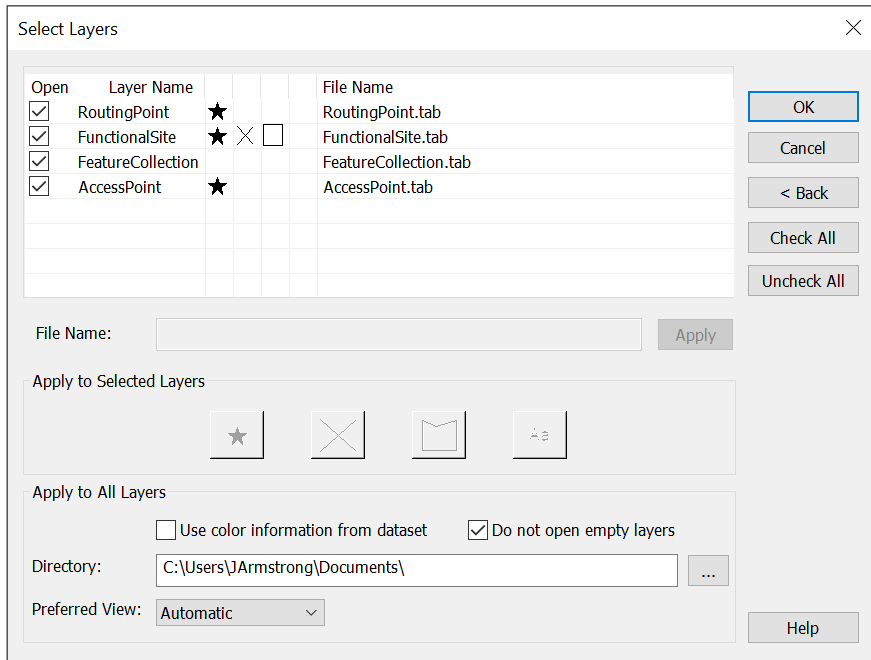
Your GML data now displays in the Maps panel and map area. The data is un-styled and will look similar to the following example:
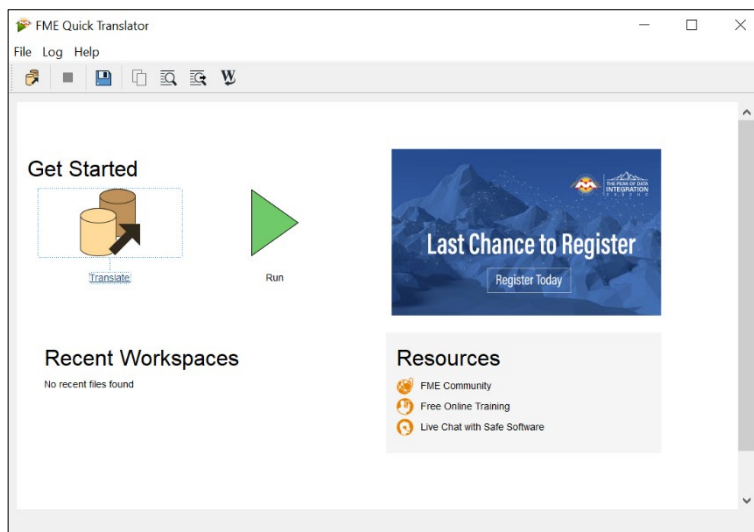
6.2   Converting GML to MapInfo TAB

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

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

2. In *Table* click *Universal Translator*.
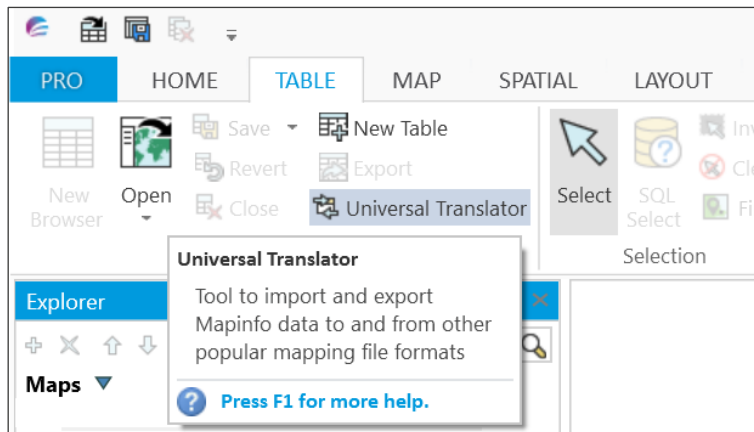
3. In the FME Quick Translator dialog click *Translate*.
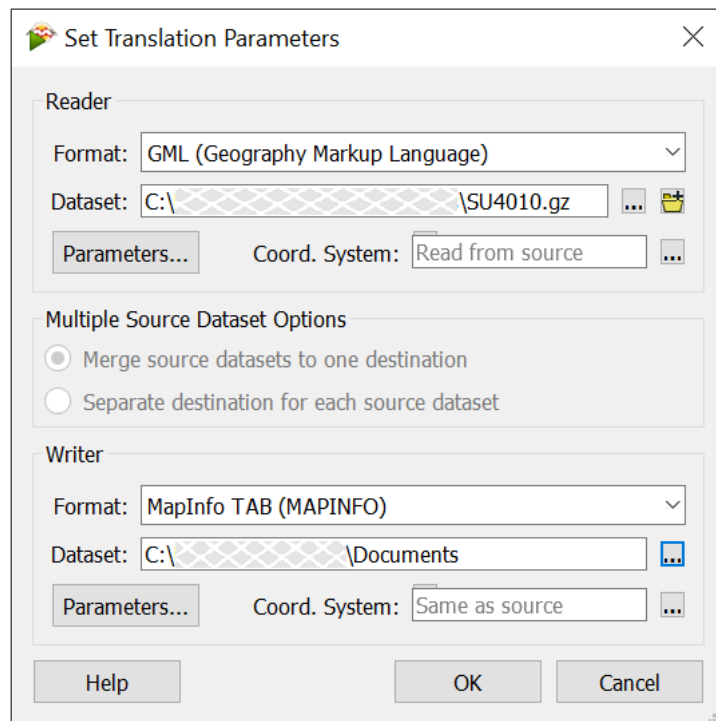
4. In the Set Translation Parameters dialog:

    a. Reader:

        i)   Format: Select *GML (Geography Markup Language)*.

        ii) Dataset: Click …, navigate to and select the GML file on your computer.
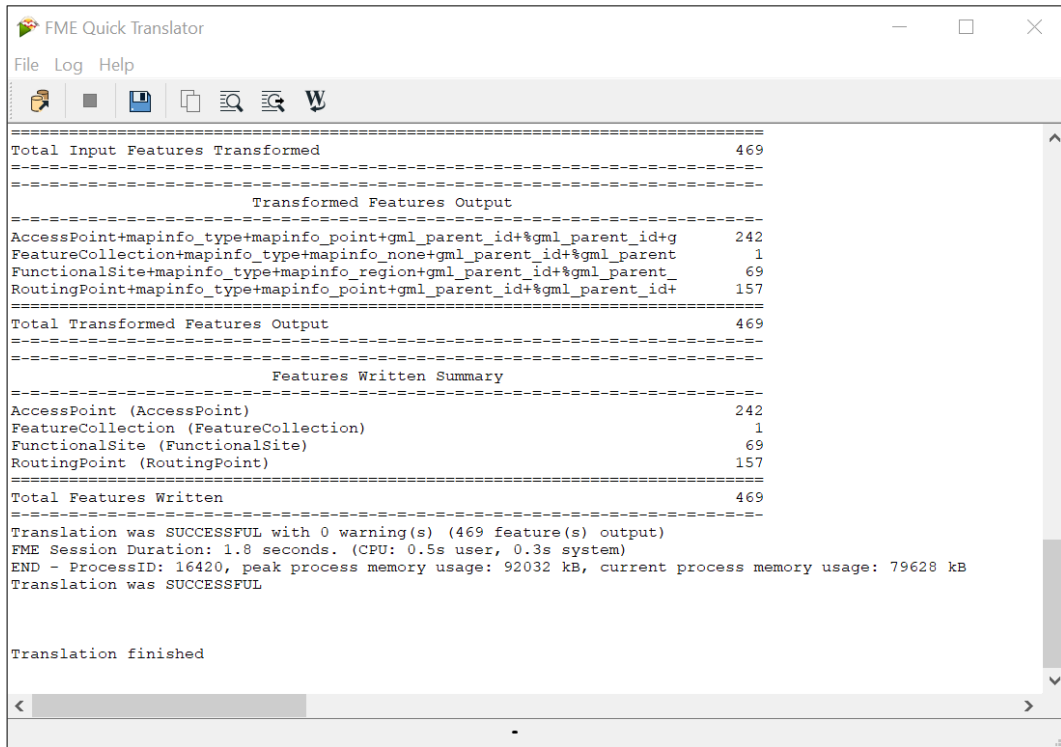
    b. Writer:

        i)   Format: Select *MapInfo TAB (MAPINFO)*.

        ii) Dataset: Click …, navigate to and select the folder in which to store your TAB files.
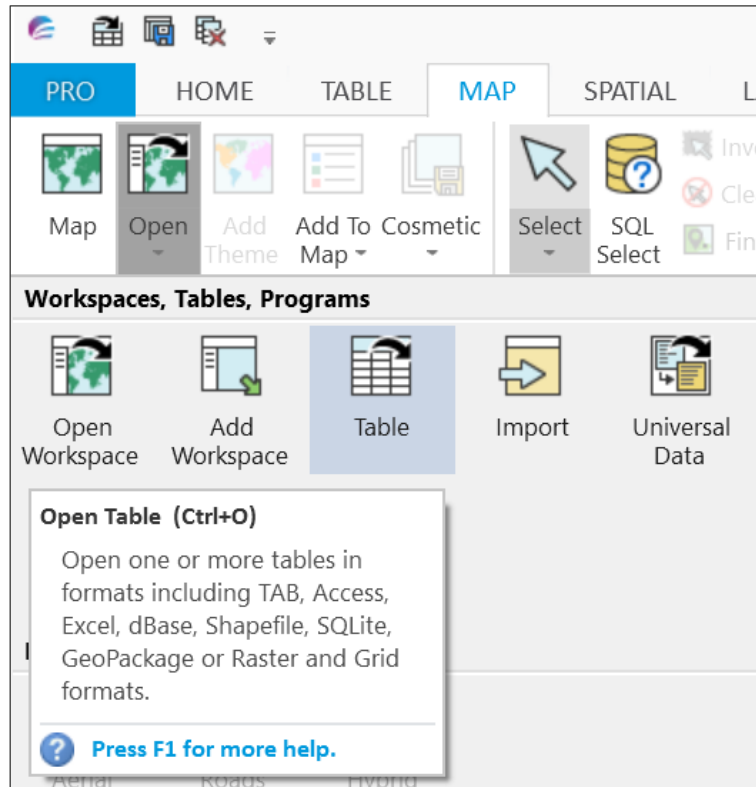
    c. Click *OK*.

5. When the conversion is complete (about 30 seconds), close the FME Quick Translator dialog.
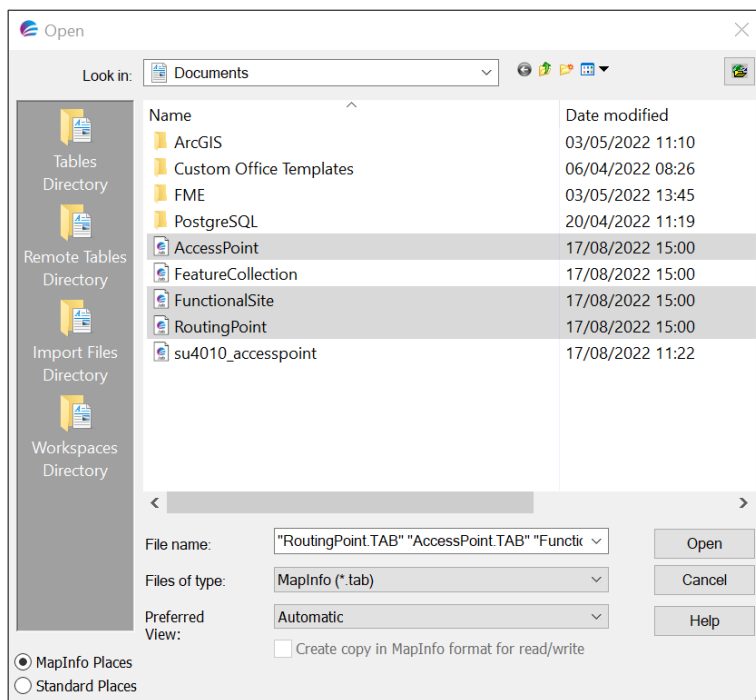
To load the converted MapInfo TAB files in MapInfo Professional:

1. In *Home* click *Open > Table*.

2. In the browser dialog, select *MapInfo (*.tab)* as the file type, navigate to the folder in which you stored the converted MapInfo TAB files, select the layers you want to open, and click *Open*.

Your data now displays in the Maps panel and map area. The data is un-styled and will look similar to the following example:
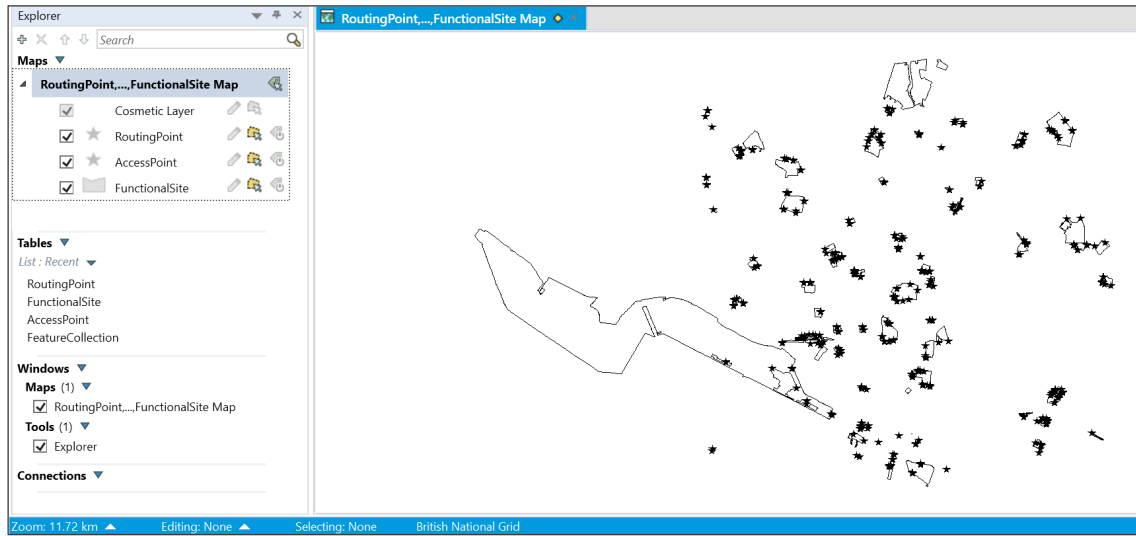
7. Astun Technology GML/KML Loader®

You can use the Astun Technology Loader to convert GML 3.2.1 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.

Note: This loader was originally written to load OS MasterMap Topography Layer data in GML / GZ format, but you can use it to load other GML data. The loader was last updated in December 2021.

Installation files and guides for the loader, including configuration examples, are available from the *AstunTechnology/Loader repository on GitHub* (https://github.com/AstunTechnology/Loader).

Annex A: Product support links

Guides

You can find additional information and documentation about the OS MasterMap Sites Layer product on the OS MasterMap Sites Layer Product Support page on the OS website (https://www.ordnancesurvey.co.uk/business-government/tools-support/mastermap-sites-layer-support).

We recommend you read the following guides:

- *OS MasterMap Sites Layer – Overview*

- *OS MasterMap Sites Layer – Technical Specification*

- *Getting Started with GeoPackage*

- *Getting Started with Vector Tiles*

Stylesheets

Predefined stylesheets for OS MasterMap Sites Layer are available for download from the Ordnance Survey *OSMM-Sites-stylesheets* GitHub repository (https://github.com/OrdnanceSurvey/OSMM-Sites-stylesheets).

To download a ZIP containing all stylesheets, navigate to *Code > Download ZIP*.