



ORDNANCE SURVEY GB

ADDRESSBASE CORE GETTING STARTED GUIDE

Version history

Version	Date	Description
1.0	07/2020	Initial release
1.1	10/2020	Release of tiled orders and document improvements
1.2	09/2021	Formatting updates

Purpose of this document

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

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Contact details

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

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I. Introduction

AddressBase Core is an easy-to-use, accessible addressing data product that gives Plug and Play access to complete and accurate address data. It takes key elements from existing AddressBase products and places them into a new simplified product. AddressBase Core is available to Public Sector Geospatial Agreement (PSGA) members, OS Partners and to commercial customers under commercial licencing. Please note that not all of the product variations will be available to each of these groups.

AddressBase Core's primary source of addressing information is Local Authority data. They have the statutory responsibility to capture and maintain Great Britain's address data, which ensures its authenticity and authoritative nature. Records are supplemented with Royal Mail Postal Address File (PAF) information where it is matched to a Local Authority address. Also, Ordnance Survey is adding additional information on the usage of the address and unique identifiers to allow links to other OS products and third-party datasets.

The instructions contained in this document show you how to use AddressBase Core. The data is supplied as comma-separated values (CSV) or GeoPackage. This guide covers the steps required to load into various geographic information system (GIS) software application and/or databases, including how to apply a change-only update (COU). It is important to note that this is not an extensive list of the applications it can be used in, and many other GIS software applications and/or database can be used to load the product. Ordnance Survey does not recommend specific suppliers or software products, as the most appropriate system will depend on many factors, for example, the amount of data being taken, resources available within the organisation, the existing and planned information technology infrastructure and the applications that AddressBase products can be used for.

I.1 Target audience

This document is intended for users with basic technical knowledge of GIS/databases who are comfortable navigating the internet.

I.2 Support resources

Find further resources on the [AddressBase Core product support webpage](#), which includes:

1. A Technical Specification.
2. A classification codes look up table.
3. A GSS code look up table.

2. Data supply

AddressBase Core is supplied in two optional offerings:

- As a Managed Great Britain Set (MGBS), which provides national Great Britain data in one of two formats: CSV and GeoPackage.
- In 5km tiles, in either CSV or GeoPackage – CSVs will be supplied as individual tiles if multiples are selected by the user, whereas GeoPackage will only ever be supplied as one file.

2.1 Backup provision of the product

You are advised to copy the supplied data to a backup medium. This is particularly useful if you take a COU supply to keep an archive of records. Information on how to do this can be found in [Section 5.5.1](#).

2.2 Typical data volumes

For reading purposes, it is recommended to store the data on a single hard disc. This will speed up the ability of your computer to read the data.

Unzipped file sizes for a full supply of the product are as follows:

- CSV 8GB
- GeoPackage 12GB

Unzipped file sizes of the COU will vary upon each release as this will be dependent on the number of changes or records within a given tile.

2.3 Download

PSGA customers can download full supply and COU of AddressBase Core via our download service.

1. When you click *Download data*, you will be required to enter a password to access the PSGA members' area. On successful entry to the download service, you will be able to view all your orders in the members' area and download your data.
2. If you have ordered your data from our online portal, you will be sent an email with a link to a download page.
3. Within the PSGA members' area, you can order and download the data that you require by clicking on *Order Data*, which is found under the *Map Data* heading.
4. Once you have selected *Order Data*, you will be presented with the Order page. From here, you can manage all your orders, including those for AddressBase products.
5. When you have placed an order for a product, the data will become available as a zipped data file. To unzip these files, please refer to [Section 2.4](#).

2.4 Unzipping the data

The CSV and GeoPackage data are supplied in a compressed form (zip). Some software can access these files directly, while others will require it to be unzipped.

To unzip the zipped data files (.zip extension), use an unzipping utility found on most PCs, for example, WinZip. Alternatively, open-source zipping/unzipping software can be downloaded from the Internet, for example, 7-Zip.

The first level zip folder will contain the following:

- Order Details.txt – a summary of the order including order type, format and information on files supplied.
- Zipped folder with the product inside – this will be named as followed:
AddressBaseCore_{variant}_{order_date_YYYY-MM-DD}_{file_number_NNN}.{format}.zip
 - variant = FULL, COU
 - order_date = the date when the order was received, for example, 2020-02-11
 - file_number = three-digit zero padded file number, for example, 001
 - format = csv, gpkg

Example:

AddressBaseCore_FULL_2020-01-30_001.gpkg.zip

or

AddressBaseCore_COU_2020-01-30_001.csv.zip

The product within the zip folder will use the same naming convention as above but without the .zip at the end.

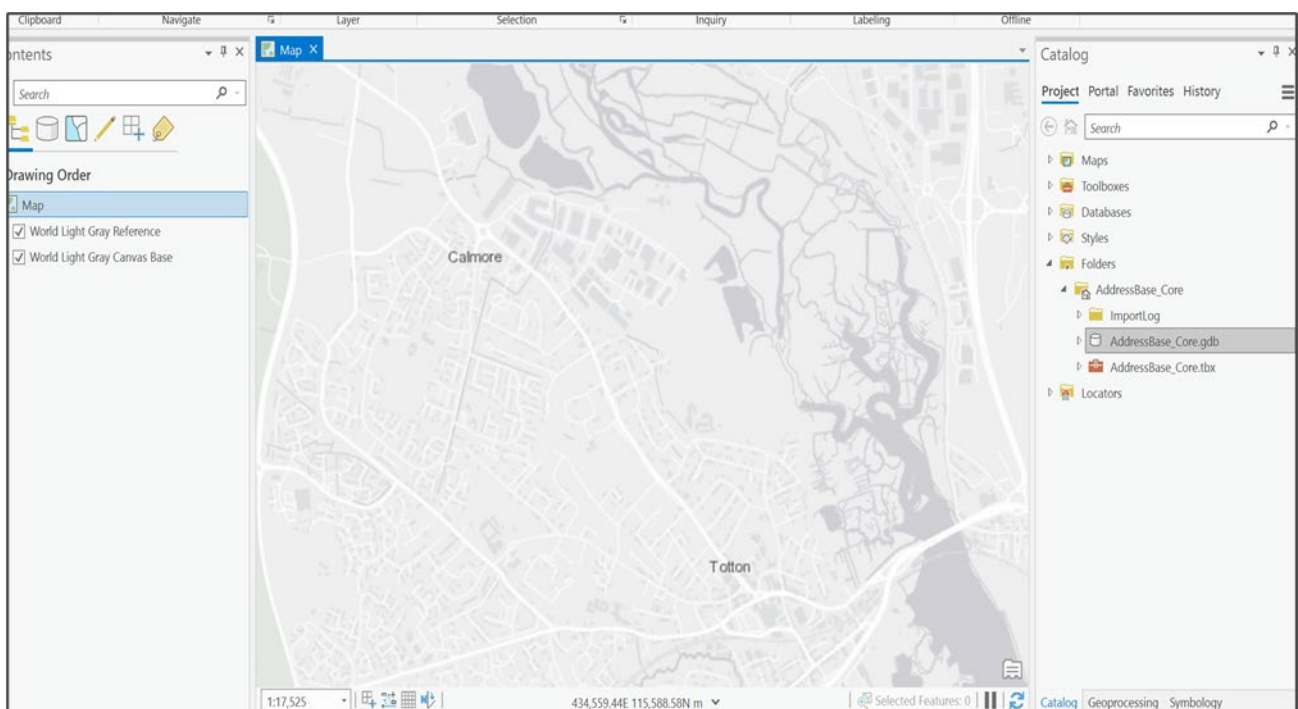
3. Loading AddressBase Core into GIS software

3.1 ArcGIS Pro

For the purposes of illustration within this guide, version 2.3.3 of ArcGIS Pro is being used. Other more recent releases of the application should perform in a similar manner.

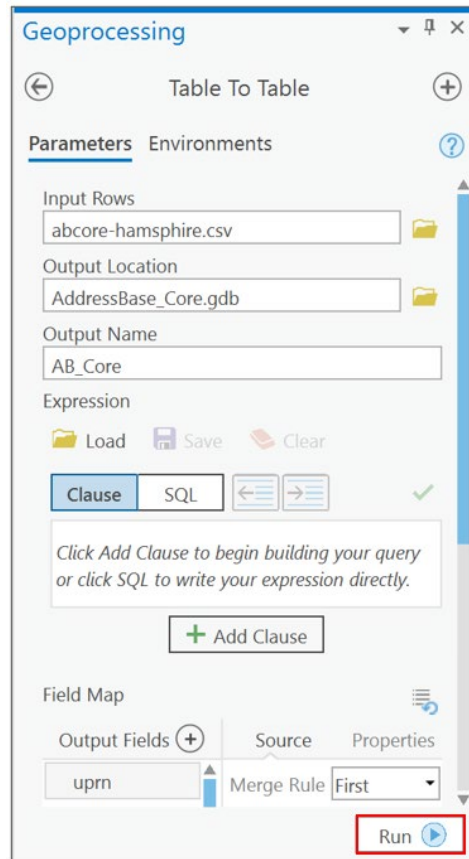
3.1.1 Loading CSV data

1. Create a new blank map project in ArcGIS Pro and select an appropriate map backdrop to use as context against which to display the data.
2. In the creation of the project, ArcGIS Pro will create a new File Geodatabase into which data can be loaded.
3. Select an area in the mapping which displays the backdrop of the area of the country of interest.
 - a. On the right-hand side of the window, open the Catalog pane.
 - b. Expand the folder structure to show the new file geodatabase created with the project. In this example, the database is called *AddressBase Core*.



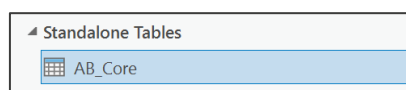
4. Right-click on the file geodatabase and in the context menu, select *Import table*. A new geoprocessing window will appear.
5. Fill in the boxes appended with a red asterisk.

6. Navigate to the location of the AddressBase Core .csv file.
7. Provide a name for the output standalone table. Once this has been done, a window should appear similar to that in the following image.



8. Once satisfied, click the *Run* button.

The application will now run a script to load the CSV file into the file geodatabase. A green tick box message will appear when complete. A new standalone table will appear in the left-hand pane.



The contents of the new standalone table can be displayed by right-clicking on the new table and selecting *open*. The contents of the file are now displayed in a new browsing window.

AB_Core										
Field:	Add	Delete	Calculate	Selection: Zoom To Switch Clear Delete Copy						
OBJECTID	uprn	parent_uprn	udprn	usrn	toid	classification_code	easting	northing	latitude	longi
1	1710000098	<Null>	22870140	12315050	osqb1000013894983	RD	464098	132350	51.086889	-1.08
2	1710000099	<Null>	<Null>	12319953	osqb1000013856893	C	463084.79	131451.69	51.078924	-1.10
3	1710000101	<Null>	22870488	12319953	osqb1000013894842	RD	464139.9	131657.42	51.080657	-1.08
4	1710000102	<Null>	22870501	12319953	osqb1000013856852	RD	463396.1	131642.3	51.080603	-1.09
5	1710000104	<Null>	22870538	12316584	osqb1000013894658	RD	464930.4	130631.3	51.071342	-1.07
6	1710000166	<Null>	22870619	12316584	osqb1000013894695	RD	464586	130591	51.071019	-1.07
7	1710000167	<Null>	22870539	12316584	osqb1000013894655	RD	464969	130649.57	51.071502	-1.07
8	1710000168	10090972882	22870445	12316454	osqb1000013894846	RD	464160	131681	51.080867	-1.08
9	1710000170	10090972235	22870442	12316454	osqb1000013894833	RD	464133.36	131679.98	51.08086	-1.08

The standalone table is displayed as a browsing table. To be able to display the contents of the table against the map backdrop, you will need to display the XY data in the table by carrying out the following instructions.

Displaying the address location

1. Right-click on the AB_Core standalone table in the left-hand pane and select *Display XY Data*. A new geoprocessing window will appear on the right-hand side.

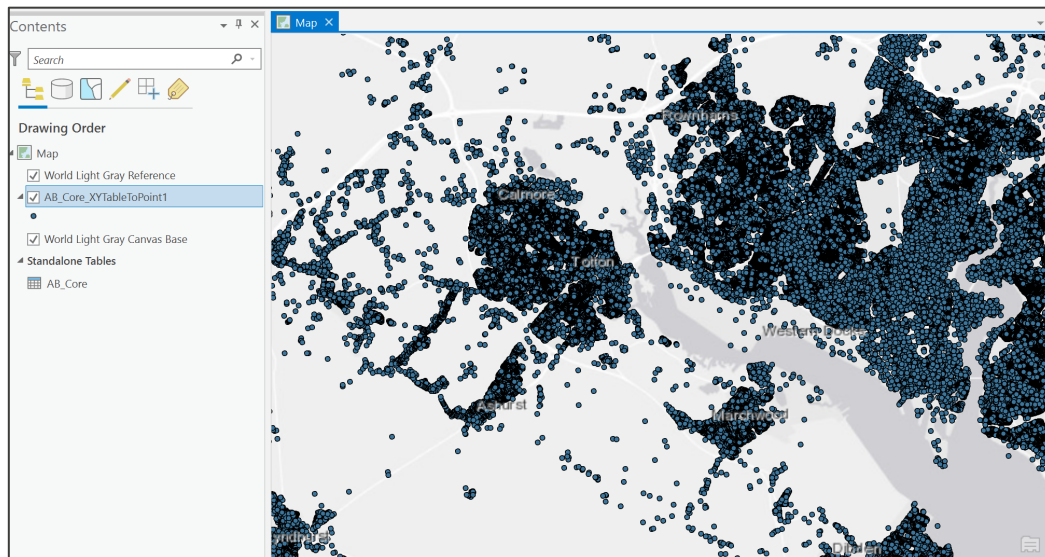
Geoprocessing
XY Table To Point
Parameters Environments
Input Table
AB_Core
Output Feature Class
AB_Core_XYTableToPoint1
X Field
easting
Y Field
northing
Z Field
Coordinate System
British_National_Grid
Run

2. Select the X Field (normally *easting*) and Y Field (normally *northing*).
3. Select the *British_National_Grid* option from the coordinate system dropdown list. The completed box should appear similar to that shown in the previous image.

- Click the *Run* button, when satisfied. The process will now run, and a green tick box message will appear when complete.

The AddressBase Core data will now display against your chosen mapping backdrop, as shown in the following image. In the left-hand side pane, a new feature class will have appeared called *AB_CoreXYTableToPoint1*.

The data can now be interrogated and styled according to your preferences.



3.1.2 Loading GeoPackage data

The AddressBase Core project created previously for the loading of CSV data described in the previous section can be used for the addition of the GeoPackage supply of the data.

- In the project, make sure the Catalog window is open on the right-hand side of the main window.

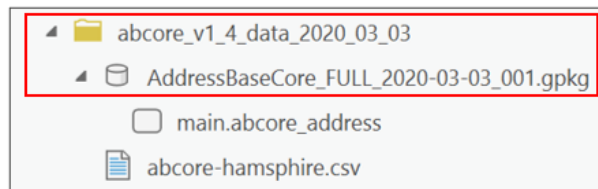


- Right-click on *Folders* and select *Add a new folder connection*.

Browse to the location of the GeoPackage file for the AddressBase Core product and select that folder. Once this has been done, the AddressBase Core GeoPackage should appear as a database in the Catalog window, as illustrated in the previous image. Allow it a little time to make the connection as

the ArcGIS Indexing server works in the background on the GeoPackage file before it is displayed. The national AddressBase Core GeoPackage file is over 13GB in size, so this will take a few minutes.

3. The coordinate reference system of the basemap being used as a contextual background should be set to *British National Grid* before loading the main.abcore_address element into the map backdrop.
4. Click the arrow to the left of the GeoPackage entry to expose the component element within the GeoPackage. This is the file which contains the data.



5. Right-click on the *abcore* element – in this example, *main.abcore_address* – and then select *Add to Current Map*.

It will now appear in the left-hand side of the main map window in the contents pane. Give the application a few minutes to load the data, especially if loading a national set. The following image shows a smaller GeoPackage covering part of Hampshire which has been loaded into ArcGIS Pro using the method described above.



3.2 ArcMap

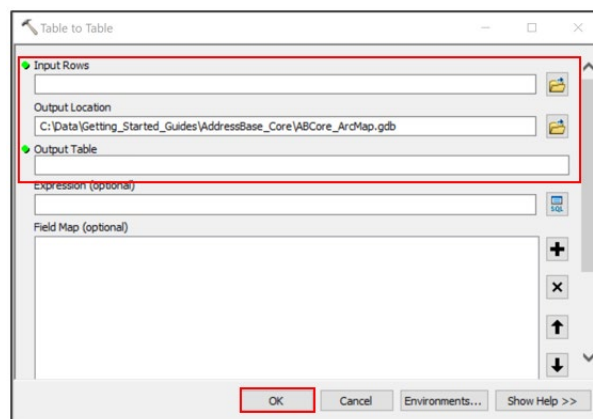
For the purposes of illustration within this guide, version 10.5.1 of ArcMap is being used. Later releases of ArcMap should behave in a similar fashion.

3.2.1 Loading CSV data

1. Open ArcCatalog and create a new file geodatabase into which the AddressBase Core data will be loaded.
2. Give the file geodatabase a name and save it in a suitable place.

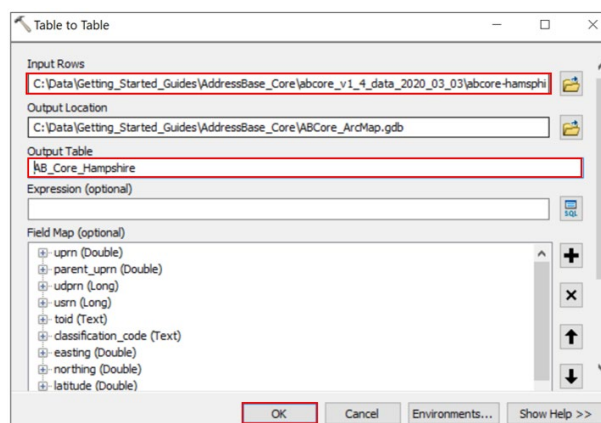
	Name	Type
C:\Data\Getting_Started_Guides		
AddressBase_Core		
abcore_v1_4_data_2020_03_03	abcore_v1_4_data_2020_03_03	Folder
Getting Started Guide	Getting Started Guide	Folder
ABCore_ArcMap.gdb	ABCore_ArcMap.gdb	File Geodatabase
AddressBase_Products		

3. Right-click on the new file geodatabase created and select *import table (single)*. A new dialog box will open.



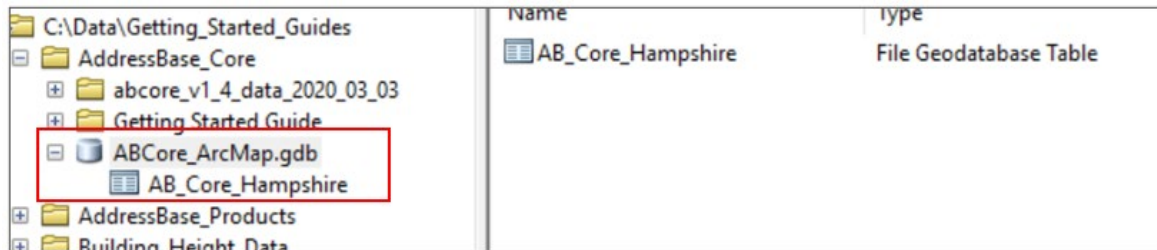
4. Enter details of the CSV table being loaded plus the output table it will be called within the file geodatabase.

When populated, the dialog box will look something like the following image. The Field Map section can be left as default as we wish to add all the fields within the CSV file.



5. Click *OK* when ready to proceed.

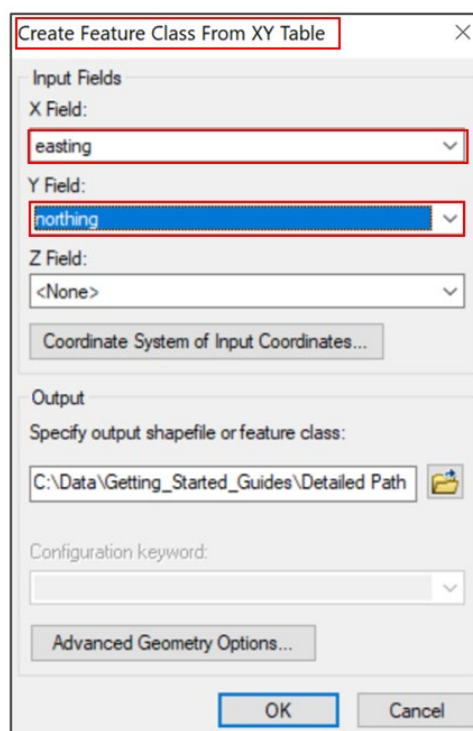
Once the process has been completed, a green tick window will appear. In Arc Catalog, you will notice that the CSV file has been added to the file geodatabase.



Creating the address location geometries

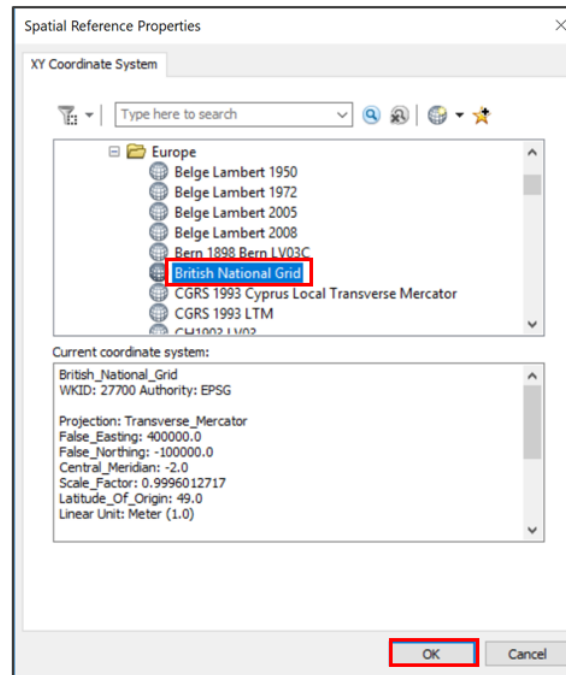
To display the data in the CSV file against a mapping backdrop, a new feature class will need to be created using the XY coordinates from the table. Use the following instructions to complete this task.

1. Right-click on the new table, select *Create Feature Class* and the subsidiary option *From XY table*.

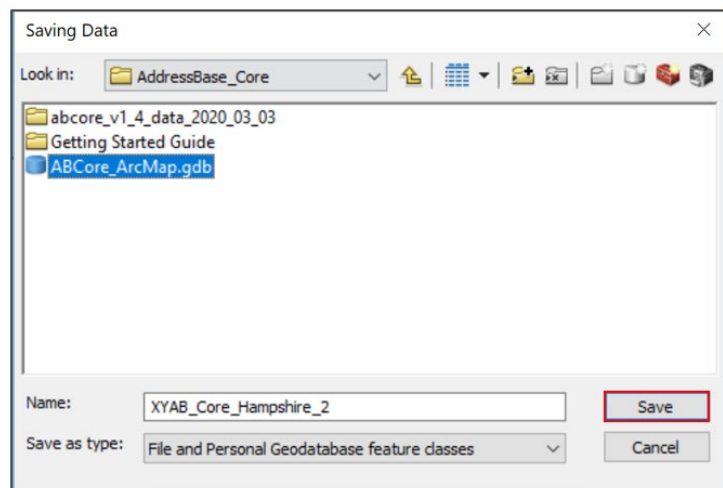


2. Select *easting* for the X Field and *northing* for the Y Field.

3. Select *British National Grid* as the coordinate reference system of the data to be output.



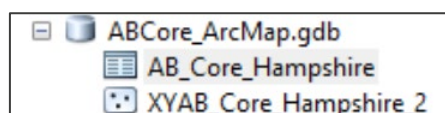
4. Click OK.
5. Next, the output needs to be specified by clicking on the folder button next to the output path dialog.



You can specify a shapefile output or a new feature class within the file geodatabase created.

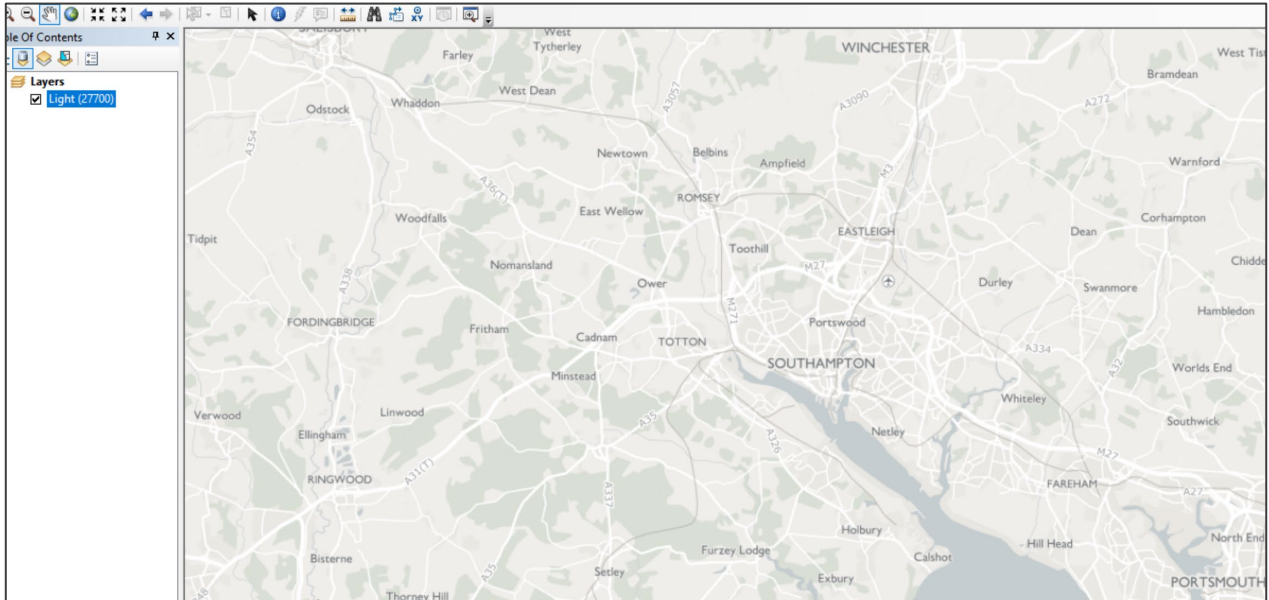
6. Select the latter of these options and give the output a name.
7. Click Save and OK in the previous window when finished.

In Arc Catalog, a new feature class will have been created as containing point features.



Displaying the address location

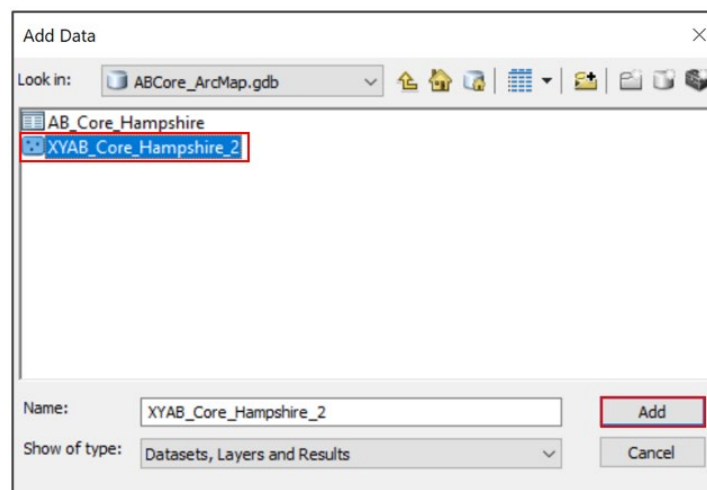
In ArcMap, open a suitable backdrop map to overlay the data against. This can be from locally held data or using one of several available WMS or WMTS mapping services available, some of which are free to use. Carry out the following steps to achieve this.



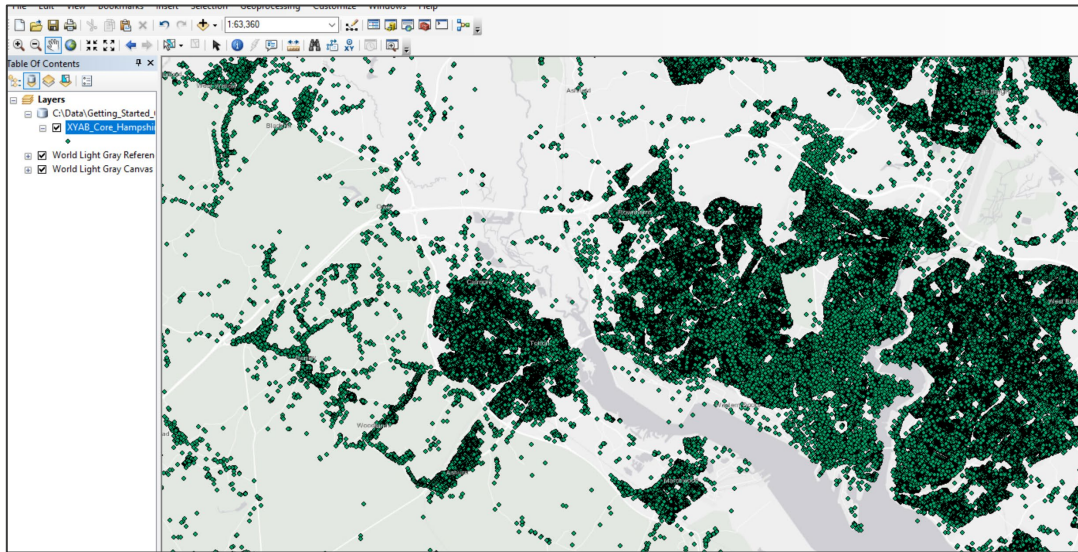
1. In ArcMap, click *Add Data*.



2. Navigate to the folder that contains the geodatabase file and select the XY feature class.



3. Once satisfied, click *Add*.

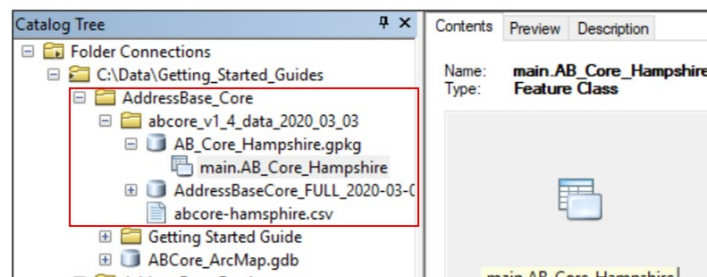


The AddressBase Core data is now displayed and ready for use in ArcMap.

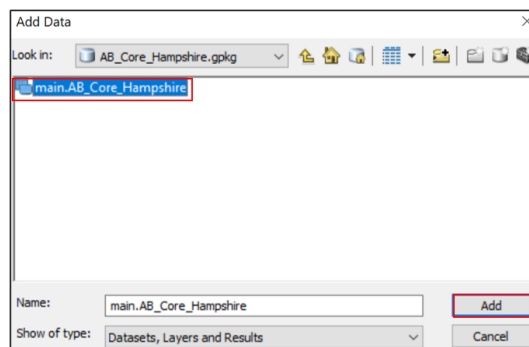
3.2.2 Loading GeoPackage data

1. In Arc Catalog, connect to the folder that contains the AB_Core GeoPackage data.

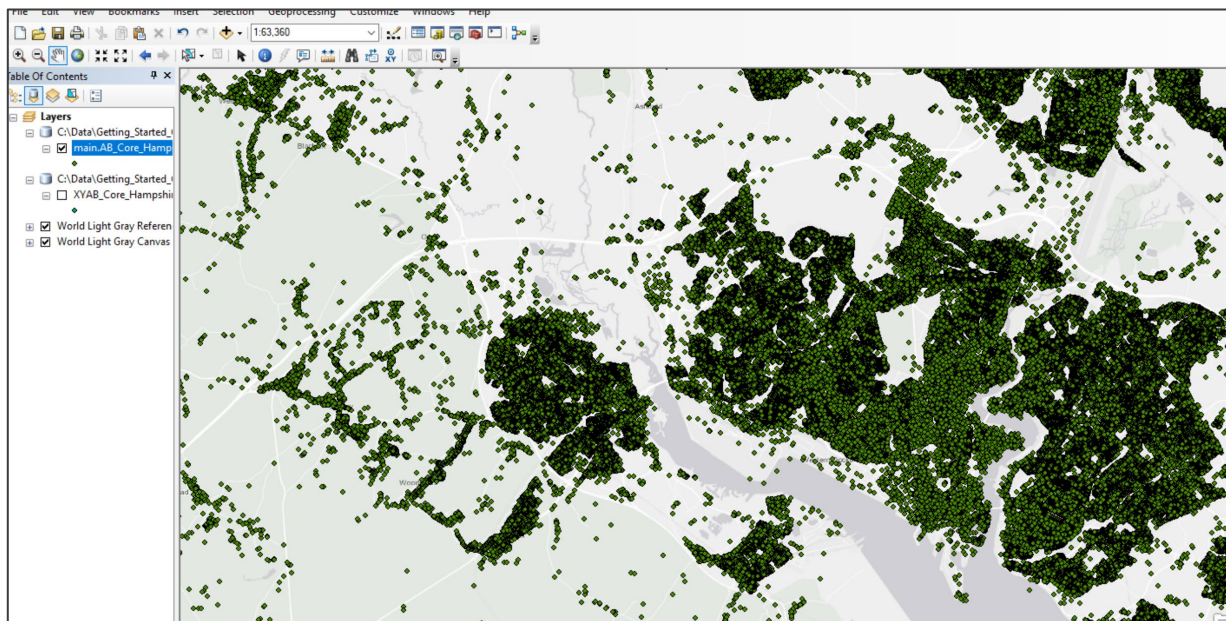
A new folder connection will need to be created if one doesn't already exist. In the example shown below, the connection in Arc Catalog has been made and the GeoPackage has been expanded to show the `main.abcore_address` element containing the AB_Core data within the GeoPackage. It is this data which will be added to the backdrop mapping in ArcMap.



2. In ArcMap, click *Add Data*, then simply navigate to the folder which contains the GeoPackage and click on the `main.AB_Core` element within the GeoPackage.



3. Select it and then click *Add*.



The data from the GeoPackage now loads into ArcMap. Unlike in the CSV option, there is no need to specify a coordinate reference system for the AB_Core data because that information already exists in the GeoPackage.

However, you will have to change the coordinate reference system of the backdrop mapping used to British National Grid beforehand to get the data to display in its correct position in relation to the backdrop map.

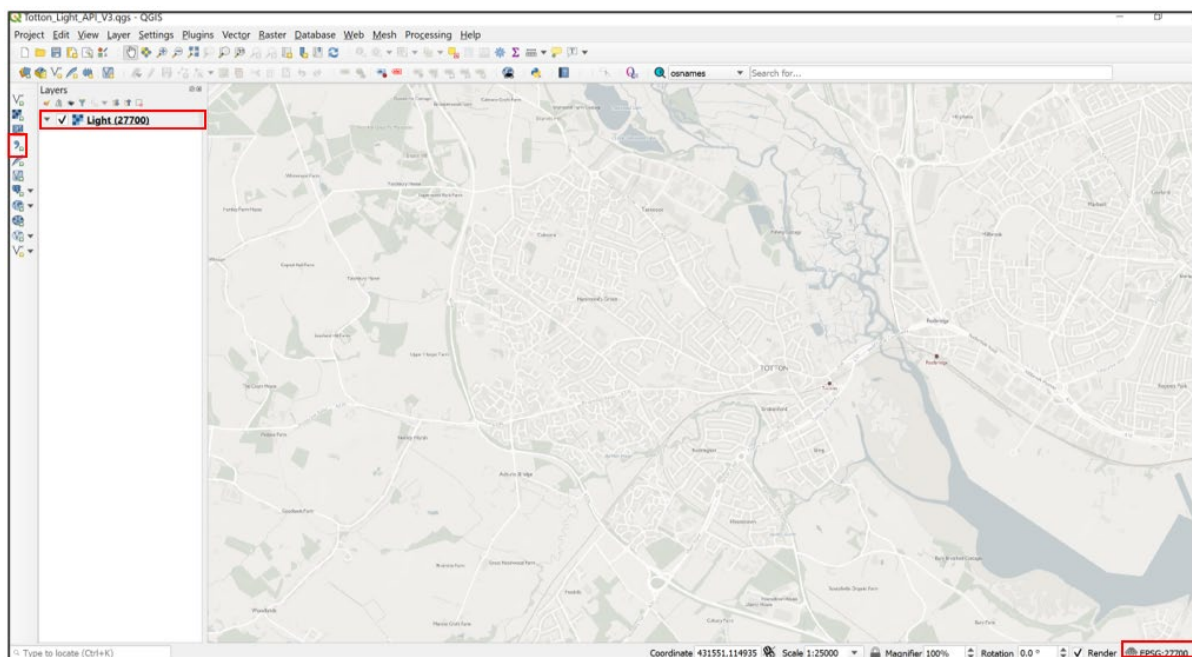
3.3 QGIS

For the purposes of illustration in this guide, version 3.10.5 of QGIS is being used to demonstrate loading and displaying of the data. This is the current Long-Term Release version of QGIS (May 2020). It is expected that the procedures described here will work the similarly in later versions.

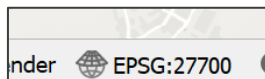
3.3.1 Loading CSV data

1. Launch QGIS with a blank new project.

For contextual backdrop mapping, you can use either a local data holding or an online mapping service from one of several providers, including Ordnance Survey.



In this illustration, we will be using the OS Maps API light background as a contextual map. Make sure that the coordinate reference system is set to *EPSG 27700 (British National Grid)*.

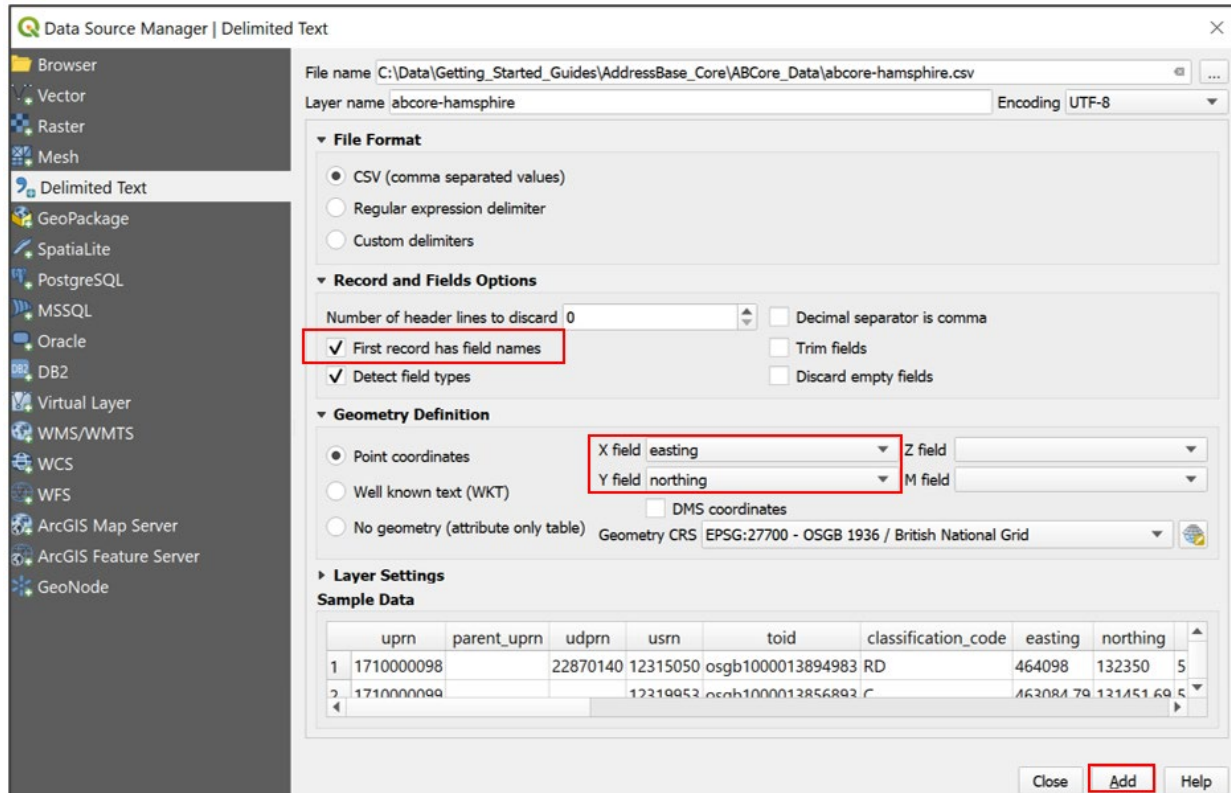


2. Click on the button of the side toolbar which has a comma on it: *Add Delimited Text Layer*.

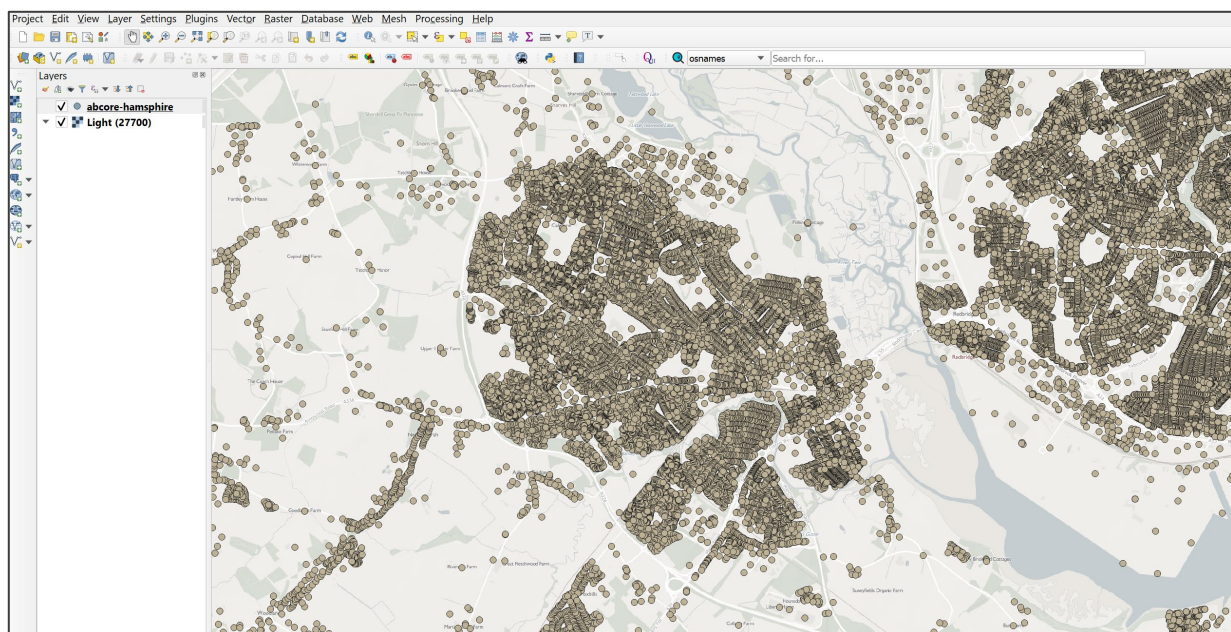
It is assumed that you have this toolbar activated in your QGIS setup. To activate it, go to the main menu and select *View > Toolbars > Manage Layers toolbar*, and make sure that the box next to this option is ticked.



3. In the next window, you will specify the location of the AddressBase Core data CSV file and make sure that the X field box is set to *easting* and the Y field is set to *northing*. The first record in the data in this instance has field names, so that box must be checked.



4. When satisfied, click *add*. The data will now load into QGIS. Close the window.

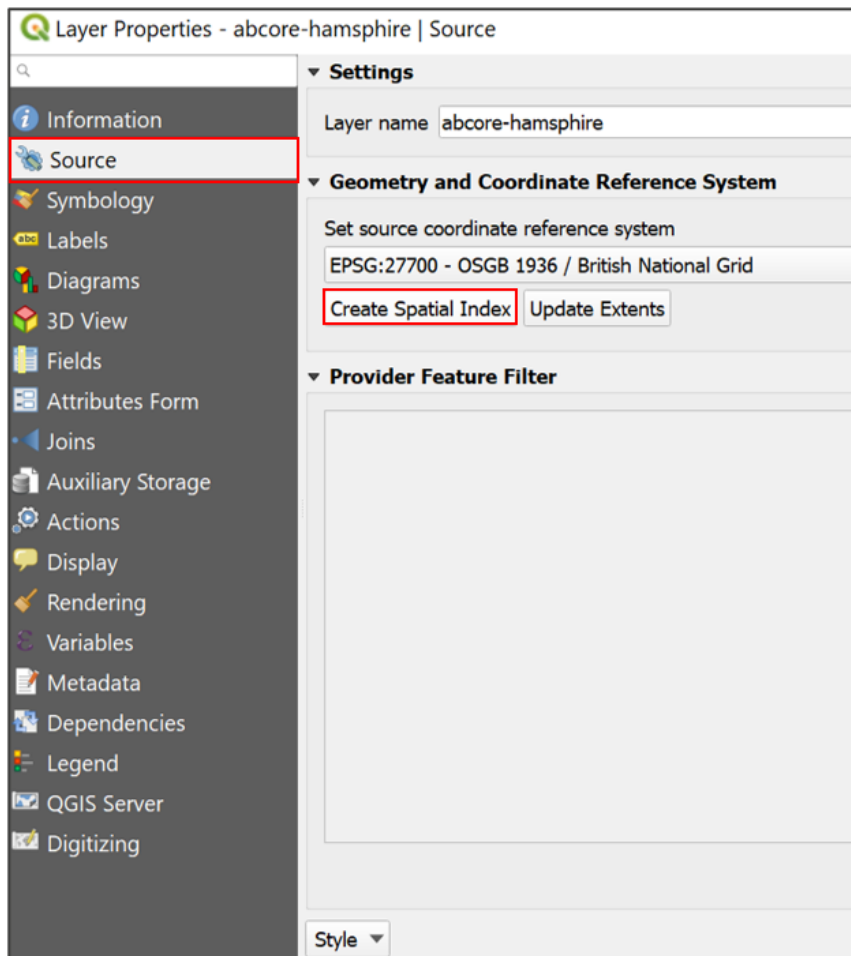


Once loaded, the data can then be interrogated and styled differently, if required, using the tools within QGIS.

Adding a spatial index to the data

TIP: Improve rendering performance by adding a spatial index to the data. The following instructions outline how to do this:

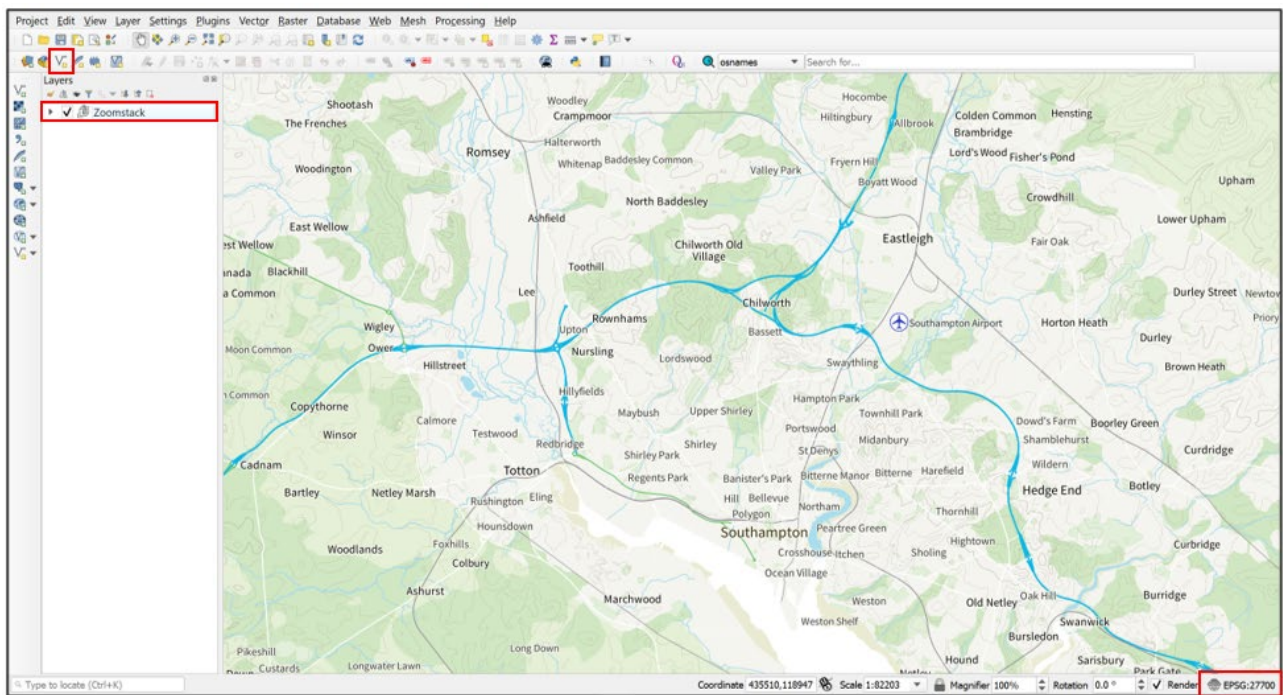
1. Right-click on the AB_Core entry in the layer window, then select *Properties*.
2. Click on the source tab on the left. The following window will appear.



3. Click *Create Spatial Index*. The index will be built, improving the rendering of the data for use.
4. Close the window when completed.

3.3.2 Loading GeoPackage data

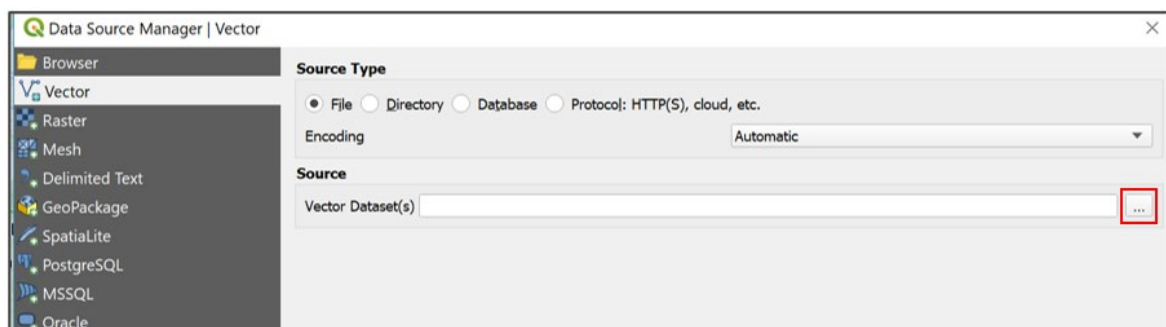
1. Launch QGIS and select a suitable mapping backdrop to provide geographical context. In this illustration, we have used the open dataset OS Zoomstack to provide a mapping context.
2. When loading the CSV data, ensure that the map window coordinate reference system is set to *EPSG 27700 (British National Grid)*.



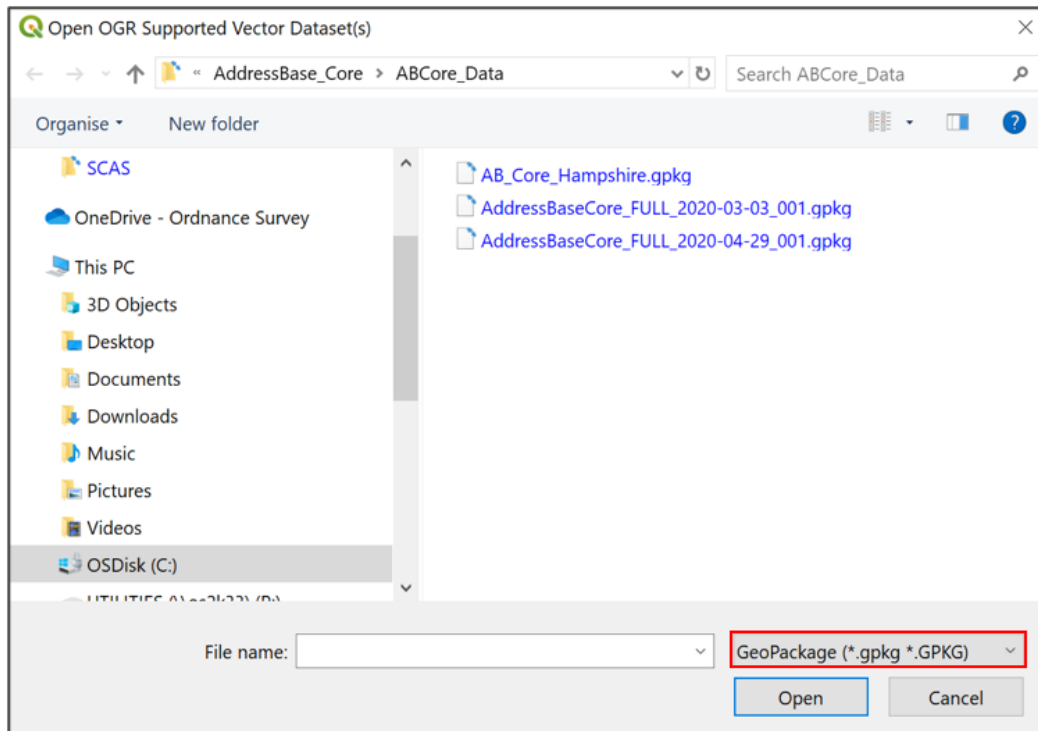
3. Click the *Add vector layer* button in the *Layers* toolbar on the left-hand side of the map window. Instructions on how to load this toolbar are supplied in [point 2 of Section 3.3.1](#).



4. In the next window, browse to the location of the folder where the GeoPackage file is located by clicking on the button with three dots to the right of the dialog box.



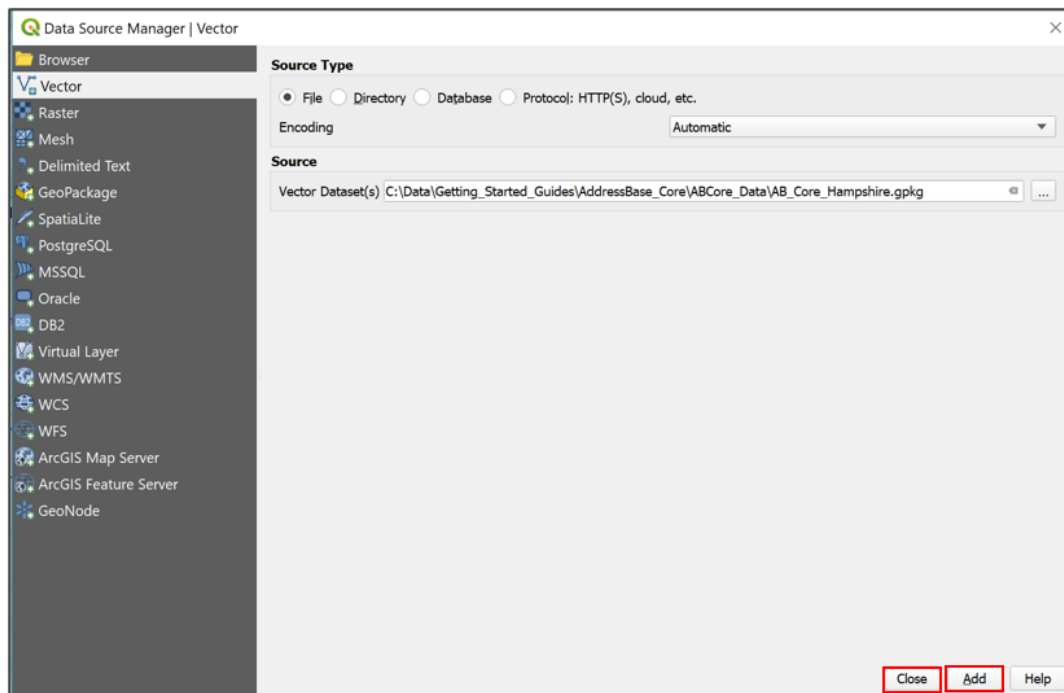
In the next window, browse to the location of the GeoPackage file.



5. Select the file to be loaded and click **OK**.

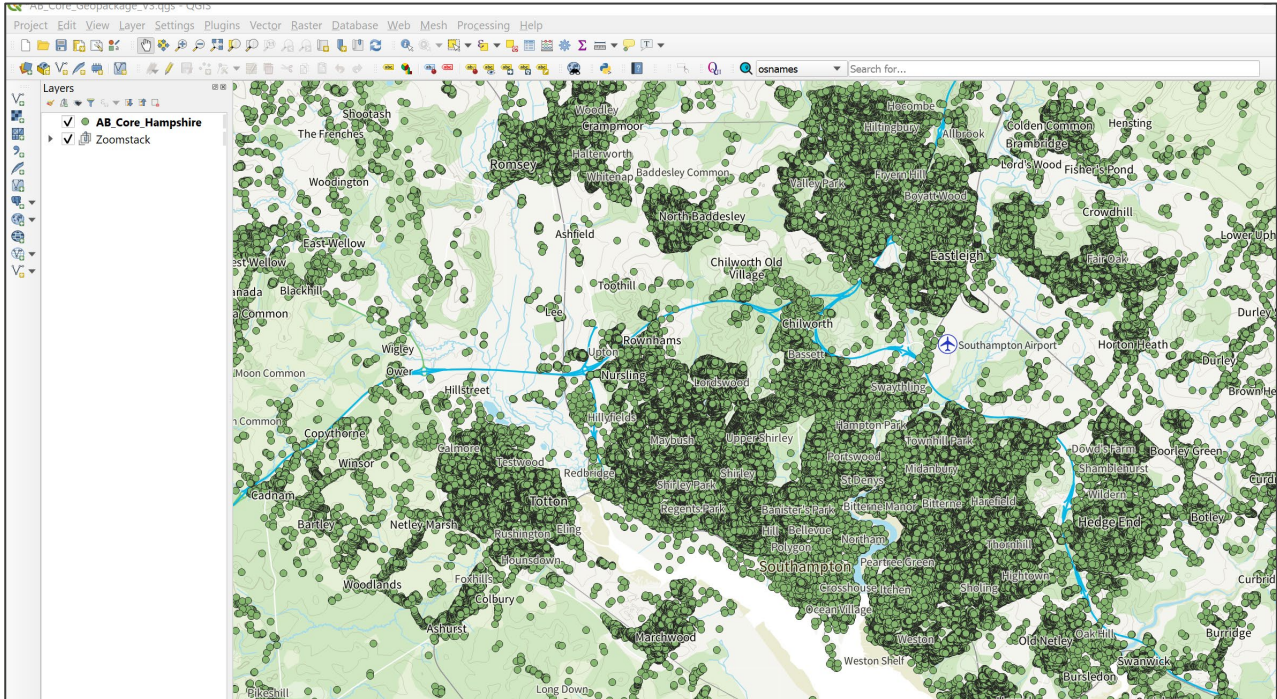
It should be noted that it is possible to filter out other files in the folder which are not GeoPackages by setting the files of type box (in the bottom right-hand corner of the window) to GeoPackage.

6. When satisfied, click **Add**. The GeoPackage data will now load into QGIS.



7. Click *Close* to close this window.

The GeoPackage data is loaded into the map window. It can now be used for interrogation with the tools available within QGIS and styled differently using the available tools if required.



The GeoPackage data does not need a spatial index to be created as that indexing is normally held within the GeoPackage itself.

3.4 MapInfo Professional

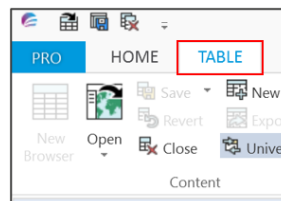
For the purposes of illustration within this guide, version 16.0.4 of MapInfo Professional is being used. More recent releases of the application should perform in a similar fashion.

3.4.1 Loading CSV data

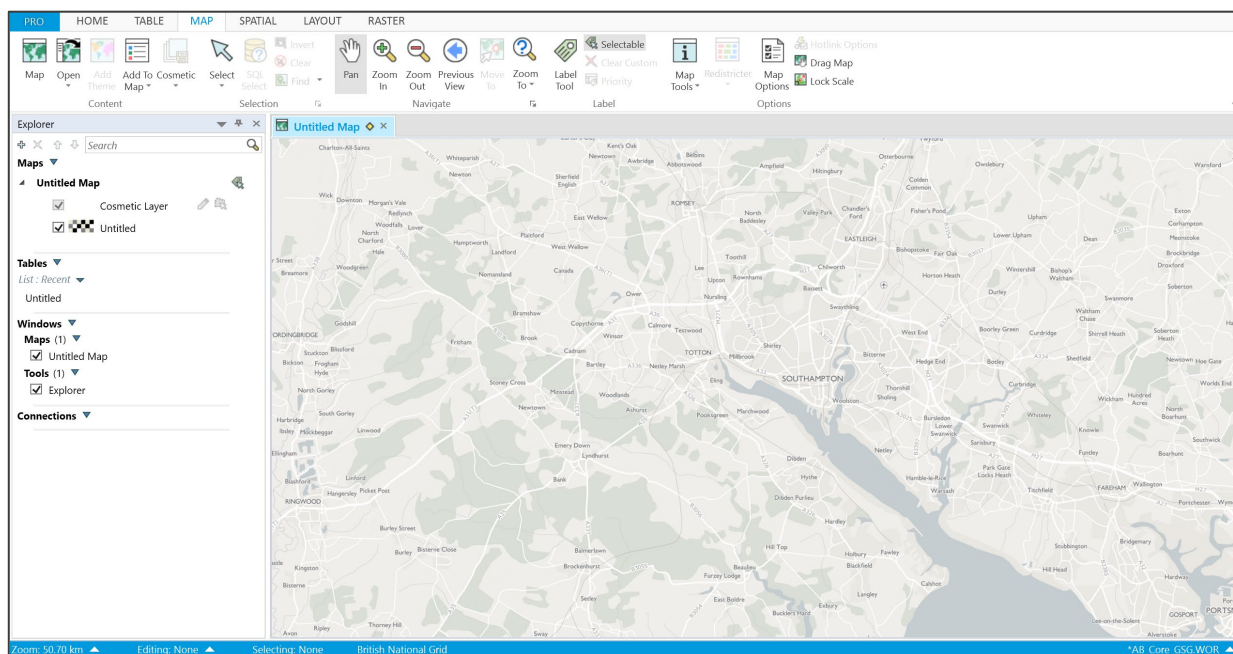
1. Launch MapInfo Professional.

For contextual purposes, load a suitable map backdrop to provide context for the AB_Core data. This can be map data held locally or from a wide variety of online sources, some of which are free to use. In this guide, the OS Maps API light backdrop canvas is used, with the coordinate reference system set to *EPSG 27700 (British National Grid)*.

2. Once the map backdrop has been loaded, as in the illustration two down, select the *Table* tab in the ribbon menu at the top of the window.



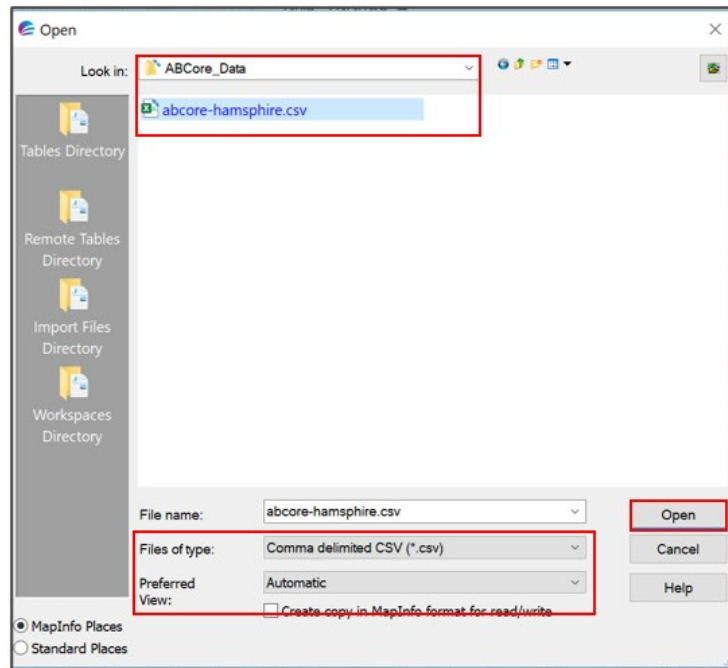
You may have set up a quick launch button to open tables at the very top of the window. The following image is an example of what the backdrop map could look like.



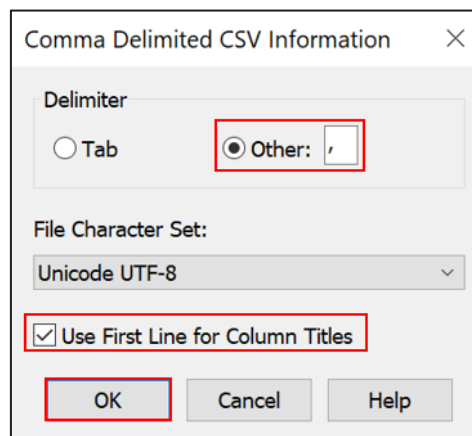
3. Click *Open*.

4. Select *Table*.

5. In the next window, browse to the folder where the AB_Core data is stored. Change the Files of type dialog to *Comma delimited CSV (*.csv)*. The Preferred View dialog can be left as *Automatic*.



6. Click *Open*.
7. In the next window, leave the Delimiter as a *comma* and the File Character Set as *Unicode UTF-8*.



8. As the AB_Core data already contains the header information within the CSV file, tick the box *Use First Line for Column Titles*.
9. Click *OK* when finished.

The AB_Core data will now be loaded into MapInfo Professional in a table browser window and will appear in the list of loaded windows in the left-hand pane.

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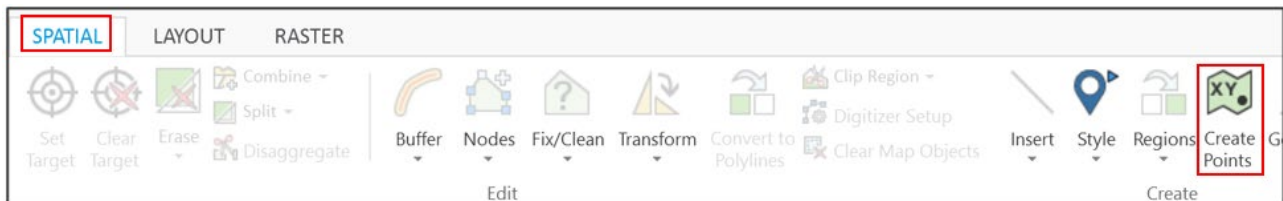
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To display the data against the mapping backdrop, the table will need to be geocoded, or in other words, the XY coordinates will need to be specified. To do this, follow the instructions below.

Displaying the address location

10. In the top ribbon menu, click on *Spatial* and then select the *Create Points* button.



11. In the next window, several options need to be set correctly in the various dialog boxes.

Create Points

Create Points for Table: **abc_core_hampshire**

using

Projection: **British National Grid**

Get X Coordinates from: **easting**

Get Y Coordinates from: **northing**

Multiply the X Coordinates: **1**

Multiply the Y Coordinates: **1**

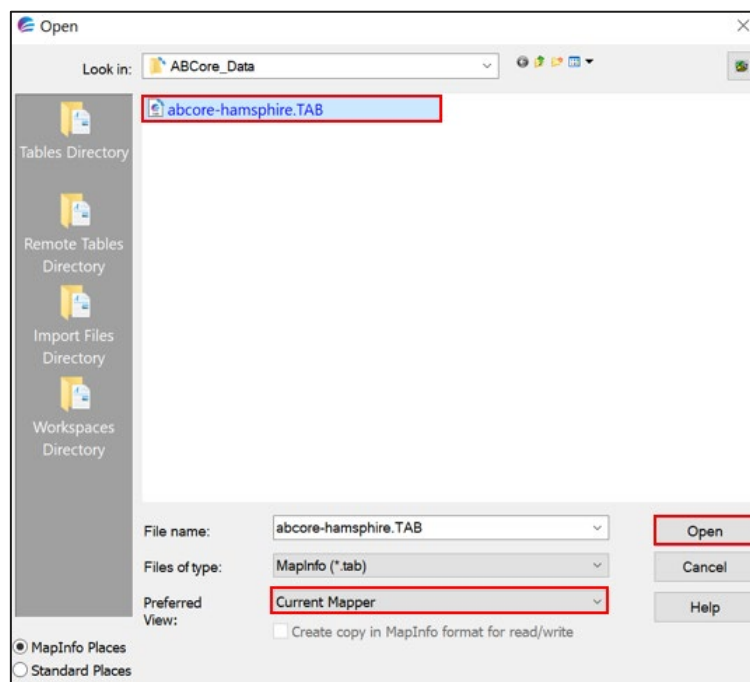
☐ Display non-numeric fields

☐ Overwrite existing points

OK Cancel Projection... Help

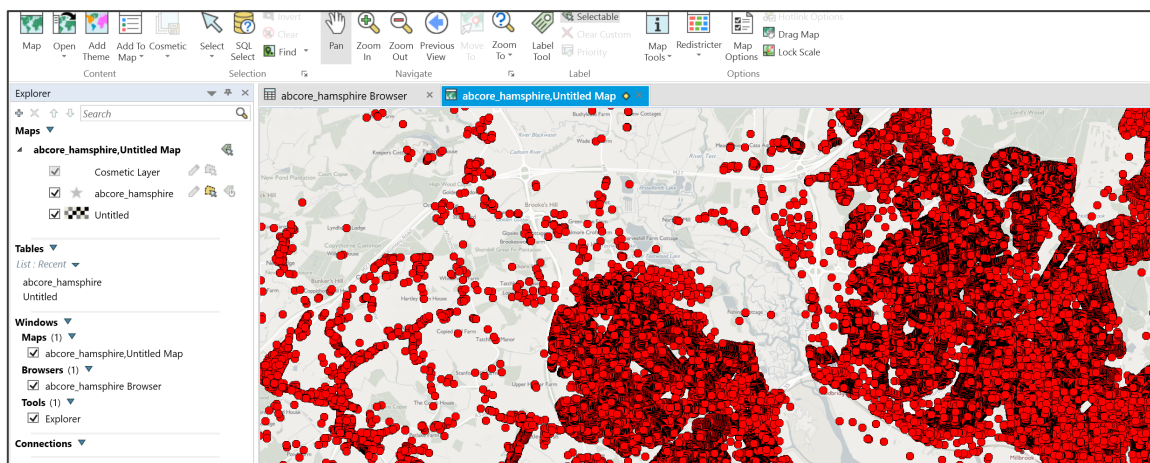
- The symbology for the added points can use various symbols from a library of appropriate symbols loaded with MapInfo.

- b. Set the Projection to *British National Grid*
 - c. Set the Get X Coordinates from dialog to *easting* and the Get Y Coordinates from dialog to *northing*.
 - d. Click *OK* when finished.
2. Select the *Table* tab in the ribbon browser and click *table-open* or use a short cut if one is defined.
3. Select the newly created table containing XY coordinates and set the Preferred View to *Current Mapper* so that the data will display against the map backdrop.



4. Click *Open* when satisfied.

The AB_Core data is now displayed against the chosen mapping backdrop. It can be used for interrogation purposes using any number of tools available within MapInfo Professional.

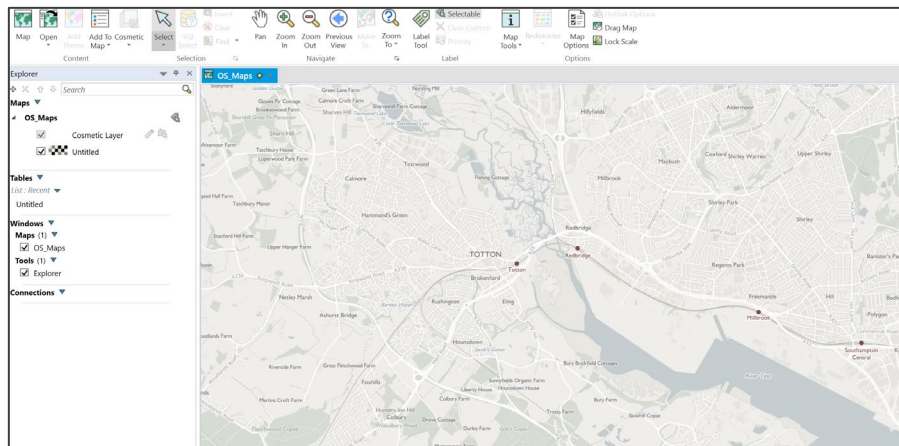


5. Save the workspace in MapInfo Professional for future use.

3.4.2 Loading GeoPackage data

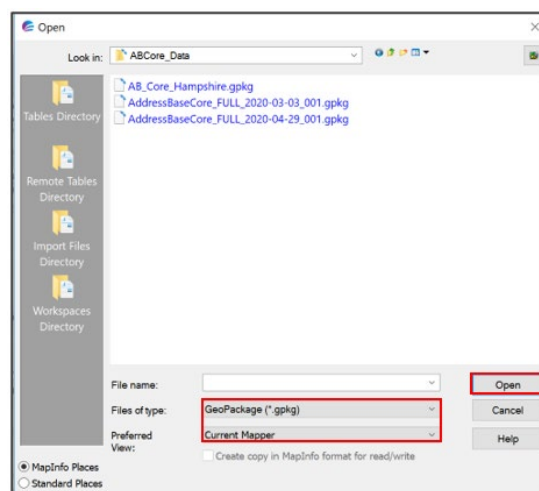
Note that versions of the application before the 16.0.0 release of MapInfo Professional do not support the GeoPackage format. Versions from 16.0.0 onwards fully support the format.

1. Launch MapInfo Professional.
2. Add a custom backdrop map as described in [point 2 of Section 3.4.1.](#)

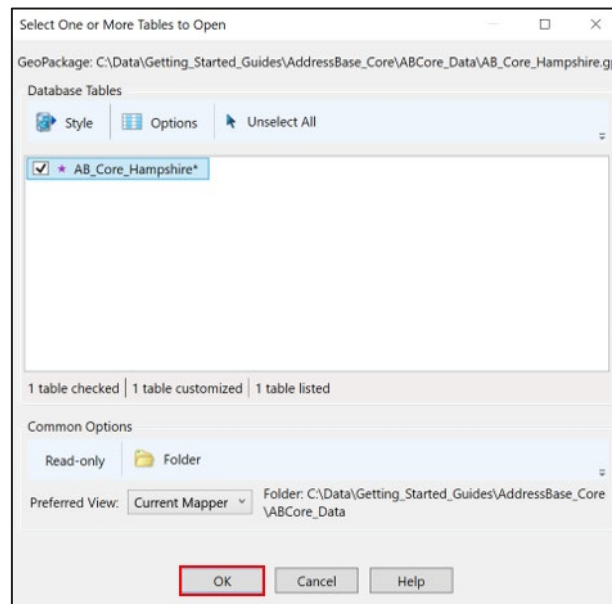


In this example, we are using the OS Maps API light backdrop canvas set to British National Grid, as was used in [Section 3.4.1 – Loading CSV](#) data.

3. Select *Table* in the ribbon menu, then select *Open – Table* or use a quick launch button to do this if it has been set up in MapInfo Professional.
4. In the next window, navigate to the *AB_Core GeoPackage* data location.
 - a. Change the Files of type dialog to *GeoPackage (*.gpkg)*.
 - b. Change the Preferred View dialog to *Current Mapper* so that the data will display against the backdrop contextual mapping chosen.
 - c. Select the file to be loaded and click *Open*.

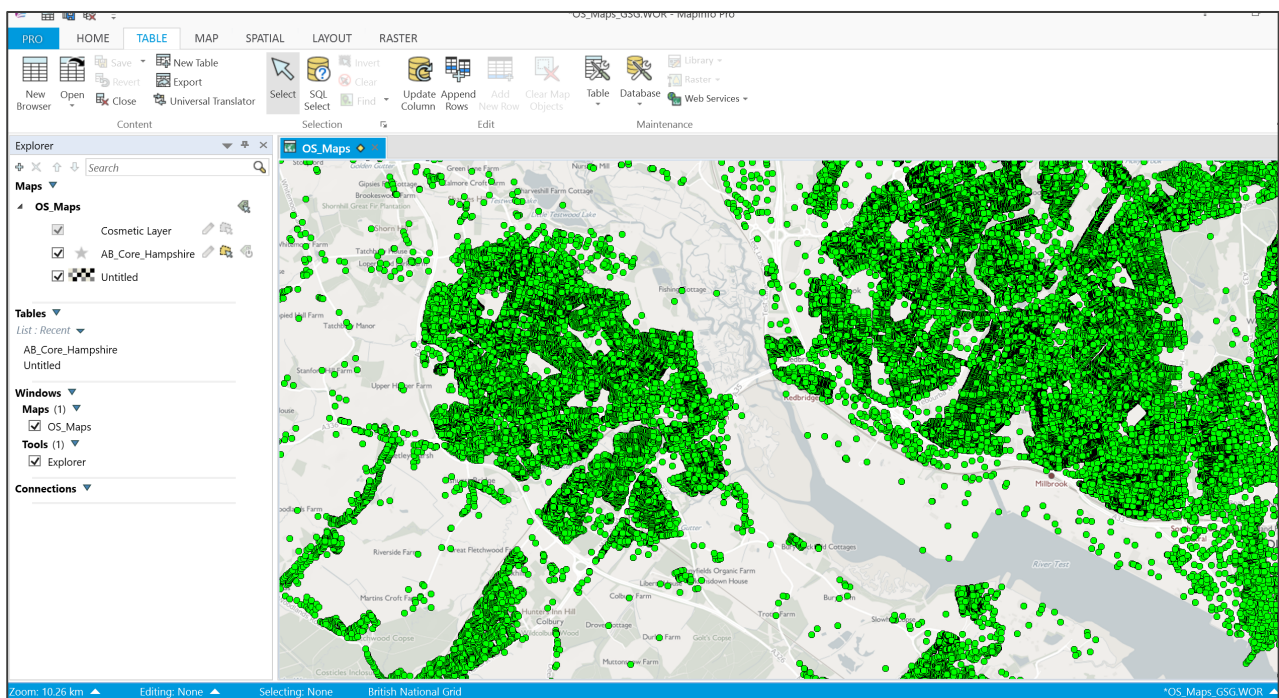


5. In the next window, the style of the loaded data can be changed to one of several different styles available within MapInfo.

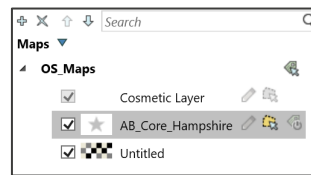


6. Select a style and click OK.
7. The location of the newly created .TAB folder which will source the GeoPackage can also be specified.
8. When satisfied with the selections, click OK.

The GeoPackage data now loads into the current map window in MapInfo Professional. It is ready for interrogation using any one of the available tools within the application.



9. The GeoPackage data can easily be browsed by right-clicking on the new GeoPackage layer in the contents pane and selecting **Browse**.



A new browser window will appear alongside the map window in the main display window.

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1	1,710,000,098	0	22,870,140	12,315,050	osgb1000013894983	RD	464,098	132,350	51.0869	-1.0862	1	2019-11-18	HEE
2	1,710,000,099	0	0	12,319,953	osgb1000013856893	C	463,084.79	131,451.69	51.0789	-1.10082	1	2019-11-18	AQI
3	1,710,000,101	0	22,870,488	12,319,953	osgb1000013894842	RD	464,139.9	131,657.42	51.0807	-1.08572	1	2019-11-18	CAR
4	1,710,000,102	0	22,870,501	12,319,953	osgb1000013856852	RD	463,396.1	131,642.3	51.0806	-1.09634	2	2019-11-18	FIEL
5	1,710,000,104	0	22,870,538	12,316,584	osgb1000013894658	RD	464,930.4	130,631.3	51.0713	-1.07462	2	2019-11-18	PEN
6	1,710,000,166	0	22,870,619	12,316,584	osgb1000013894695	RD	464,586	130,591	51.071	-1.07954	2	2019-11-18	LON
7	1,710,000,167	0	22,870,539	12,316,584	osgb1000013894655	RD	464,969	130,649.57	51.0715	-1.07407	2	2019-11-18	PEN
8	1,710,000,168	10,090,972,882	22,870,445	12,316,454	osgb1000013894846	RD	464,160	131,681	51.0809	-1.08543	2	2019-11-18	3, T
9	1,710,000,170	10,090,973,235	22,870,442	12,316,454	osgb1000013894833	RD	464,133.36	131,679.98	51.0809	-1.08581	1	2019-11-18	THE
10	1,710,000,171	0	22,870,390	12,314,933	osgb1000013894972	RD	464,109	131,962	51.0834	-1.08611	2	2019-11-18	BEE
11	1,710,000,172	0	22,870,456	12,315,688	osgb1000013894860	RD	464,275	131,795	51.0819	-1.08377	1	2019-11-18	MA
12	1,710,001,179	0	22,870,201	12,315,653	osgb1000013856991	RD	463,071	132,162	51.0853	-1.10089	2	2019-11-18	BAY
13	1,710,001,181	0	22,870,121	12,319,717	osgb1000013857154	RD	463,718.2	132,592.7	51.0891	-1.09158	2	2019-11-18	LIM
14	1,710,002,108	0	22,870,555	12,319,953	osgb1000013856832	RD	463,640	131,633	51.0805	-1.09286	2	2019-11-18	SOU
15	1,710,002,120	0	22,870,547	12,319,953	osgb1000013856842	RD	463,534	131,650	51.0807	-1.09437	2	2019-11-18	FOL
16	1,710,002,121	0	22,870,491	12,319,953	osgb1000013856896	RD	463,044.7	131,759.7	51.0817	-1.10134	1	2019-11-18	HOF
17	1,710,002,141	0	22,870,042	12,315,693	osgb1000013856733	RD	463,652.2	130,584.4	51.0711	-1.09287	1	2019-11-18	DEE
18	1,710,002,142	0	22,870,044	12,315,693	osgb1000013856742	RD	463,802.84	130,756.66	51.0726	-1.09069	2	2019-11-18	HAF
19	1,710,002,143	0	0	12,315,693	osgb1000013856817	PP	463,645	131,059	51.0753	-1.09289	1	2019-11-18	NEV
20	1,710,002,144	1,710,002,143	22,870,047	12,315,693	osgb1000013856744	RD	463,641.3	130,884.6	51.0738	-1.09298	1	2019-11-18	1, N
21	1,710,002,145	1,710,002,143	22,870,048	12,315,693	osgb1000013856745	RD	463,641.2	130,888.5	51.0738	-1.09298	1	2019-11-18	2, N

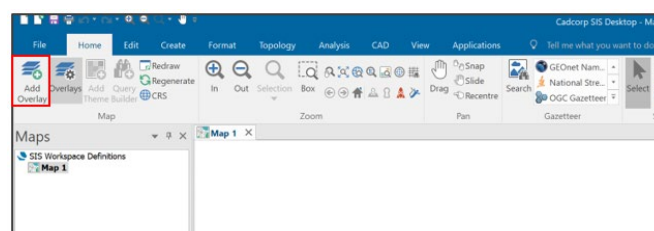
10. Save the workspace in MapInfo Professional for future use.

3.5 CadCorp Map Modeller

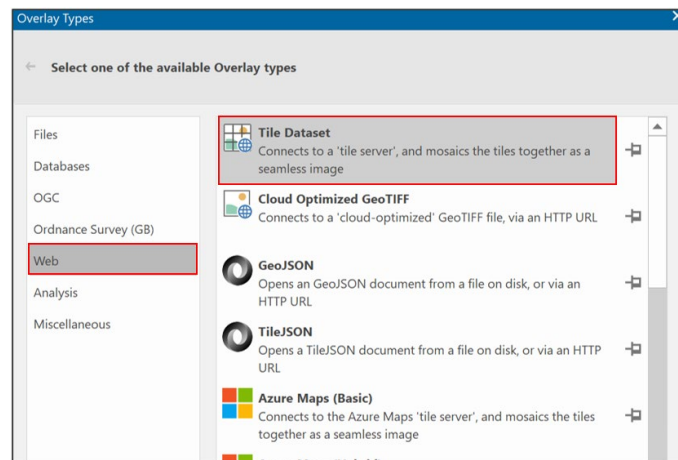
For the purposes of illustration within this guide, version 9 of CadCorp Map Modeller is being used. Although the procedures described here may work with earlier releases, it is recommended that you use the current version of the application.

3.5.1 Loading CSV data

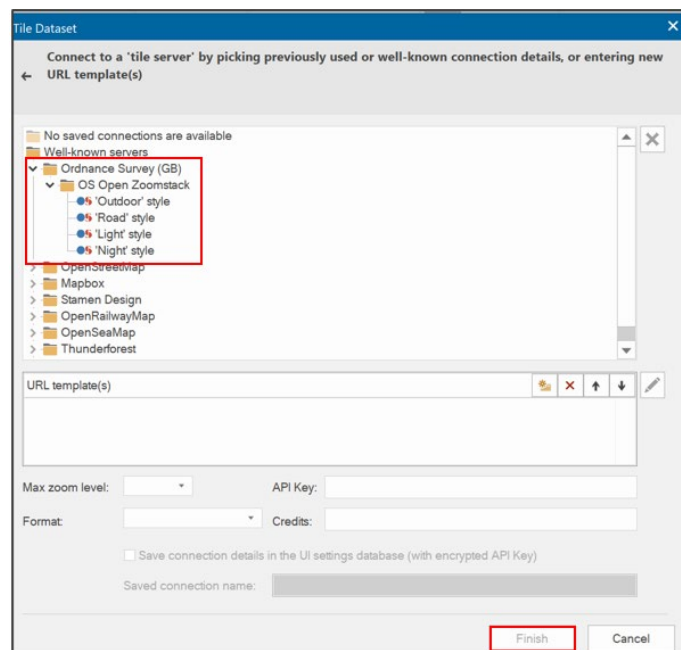
1. Launch CadCorp Map Modeller and choose a suitable backdrop map for use as a contextual backdrop. To do this, follow the instructions listed below.
 - a. Open a blank map, ensuring that the default coordinates are set to *British National Grid*.
 - b. To add a backdrop map, click **Add Overlay**.



- c. A list of overlays is provided. The one used in this illustration is *Web > Tile Dataset*. Select that option and click *Next*.



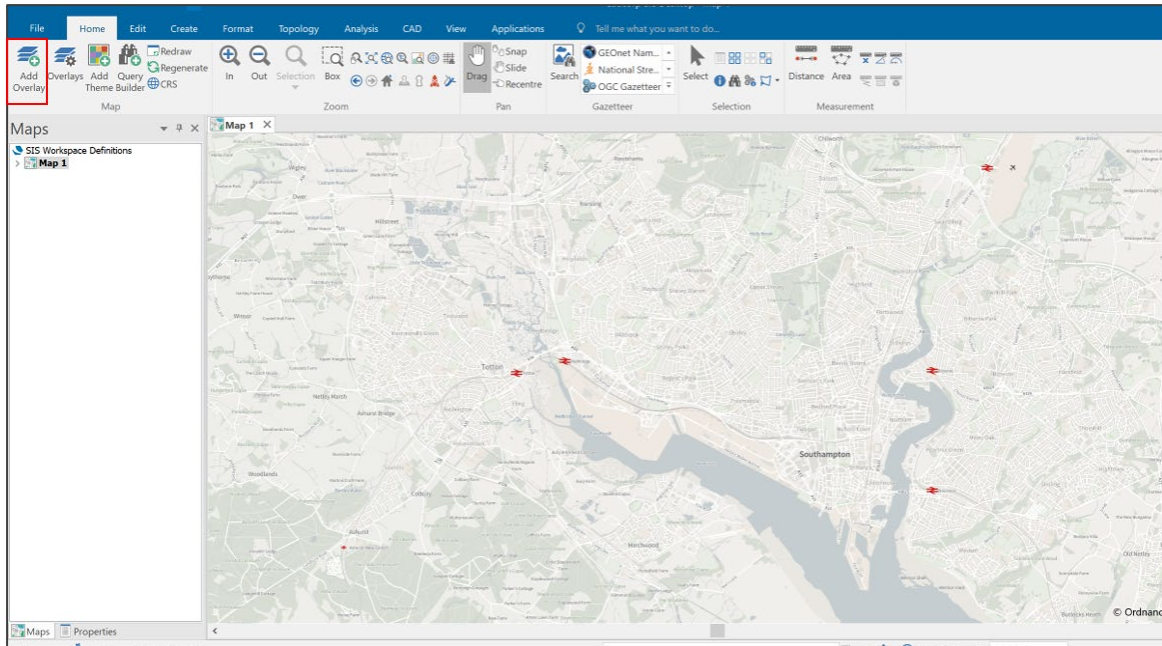
- d. In the *Tile Dataset* window, click the arrow to the left of the *Ordnance Survey (GB)* entry and select the *OS Open Zoomstack* option.



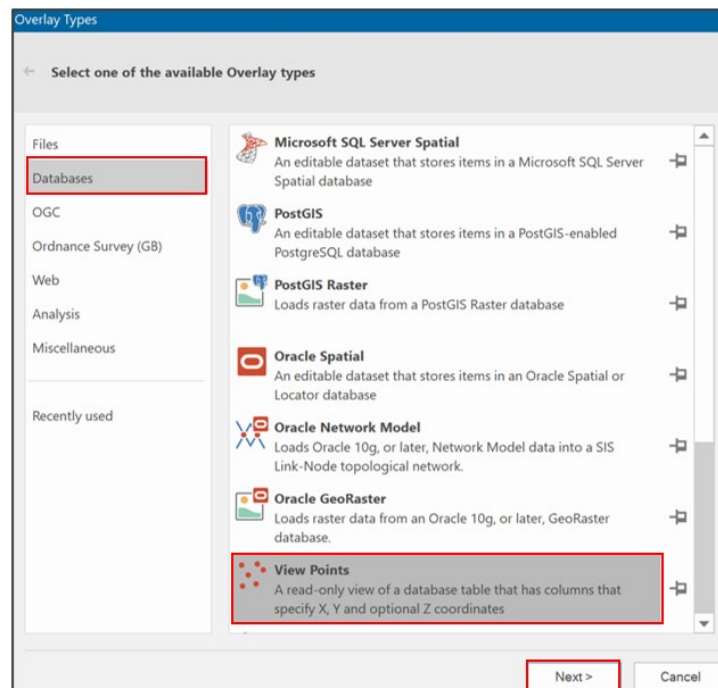
- e. Select any one of the available styles.
- f. Click *Finish*.

The backdrop mapping is loaded. For this option, an internet connection is required. You could use a locally held overlay of data as an alternative option.

2. To add the CSV data, select *Add Overlay*.

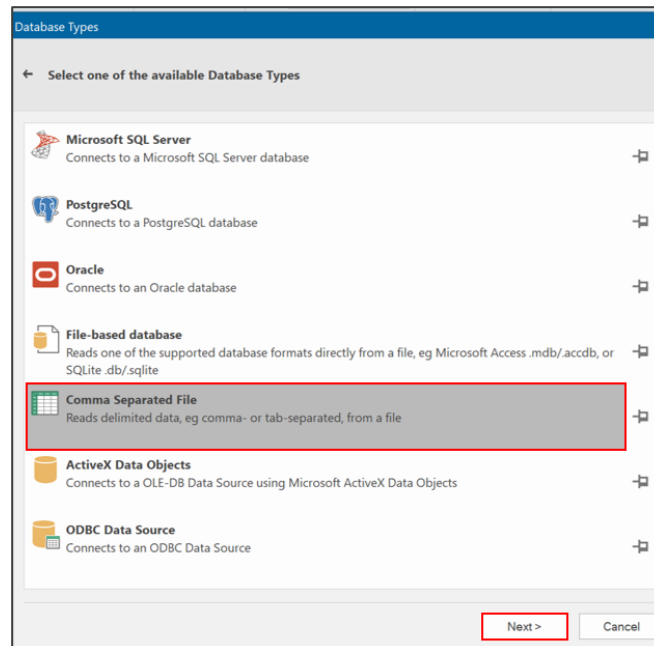


3. In the Overlay Types window, select *Databases* in the left-hand pane, then select *View Points*.

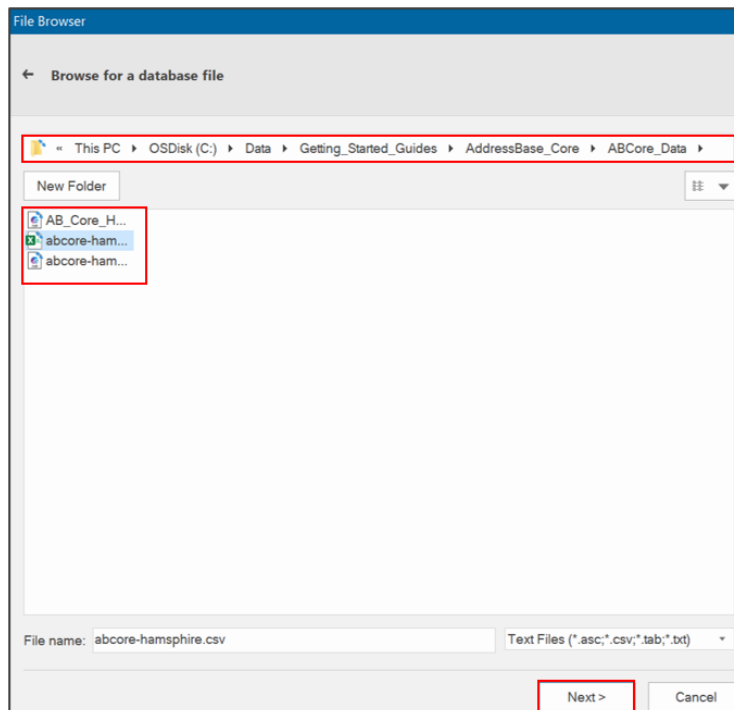


4. Click *Next*.

5. In the next window, select *Comma Separated File* and click *Next*.



6. Browse to where the CSV file is located, select the file to be loaded and click *Next*.



The next set of windows will configure the data being loaded so that it will display properly.

7. Make sure the *Keep first line* box is checked, then click *Next*.

Database file

← Configure the database file

File Type

☒ Delimited ☐ Fixed Width Code page: UTF-8 - Codepage 65001

Skip Lines

Header: ☒ Keep first line Footer: Regular Expression:

Sample rows: 100

uprn,parent_uprn,udprn,usrn,toid,classification_code,easting,northing,1...
1710000098,,22870140,12315050,"osgb1000013894983","RD",464098,132350,51...
1710000099,,12319953,"osgb1000013856893","C",463084.79,131451.69,51.07...
1710000101,,22870488,12319953,"osgb1000013894842","RD",464139.9,131657...
1710000102,,22870501,12319953,"osgb1000013856852","RD",463396.1,131642...
1710000104,,22870538,12316584,"osgb1000013894658","RD",464930.4,130631...
1710000166,,22870619,12316584,"osgb1000013894695","RD",464586,130591,51...
1710000167,,22870539,12316584,"osgb1000013894655","RD",464969,130649,57...
1710000168,10090972882,22870445,12316454,"osgb1000013894846","RD",46416...
1710000170,10090973235,22870442,12316454,"osgb1000013894833","RD",46413...
1710000171,,22870390,12314933,"osgb1000013894972","RD",464109,131962,51...
1710000172,,22870456,12315688,"osgb1000013894860","RD",464275,131795,51...
1710001179,,22870201,12315653,"osgb1000013856991","RD",463071,132162,51...
1710001181,,22870121,12319717,"osgb1000013857154","RD",463718.2,132592...
1710002108,,22870555,12319953,"osgb1000013856832","RD",463640,131633,51...
1710002120,,22870547,12319953,"osgb1000013856842","RD",463534,131650,51...
1710002121,,22870491,12319953,"osgb1000013856896","RD",463044.7,131759...
1710002141,,22870042,12315693,"osgb1000013856733","RD",463652.2,130584...

Next > Cancel

8. In the next window, make sure that the *First Row Contains Field Names* box is checked, and the *Text Qualifier* dialog is set to a comma.

File format

← Configure the delimited file format

Field delimiter

☐ Tab ☐ Semicolon ☒ Comma ☐ Space ☐ Other:

☒ First Row Contains Field Names Text Qualifier: ,

Sample rows: 100

uprn	parent_uprn	udprn	usrn
1710000098		22870140	12315050
1710000099			12319953
1710000101		22870488	12319953
1710000102		22870501	12319953
1710000104		22870538	12316584
1710000166		22870619	12316584
1710000167		22870539	12316584
1710000168	10090972882	22870445	12316454
1710000170	10090973235	22870442	12316454
1710000171		22870390	12314933
1710000172		22870456	12315688
1710001179		22870201	12315653
1710001181		22870121	12319717
1710002108		22870555	12319953
1710002120		22870547	12319953
1710002121		22870491	12319953

Next > Cancel

9. Click *Next*.

10. The Database columns window does not require any configuration.

uprn	parent_uprn	udprn	usrn
1710000098		22870140	12315050
1710000099			12319953
1710000101		22870488	12319953
1710000102		22870501	12319953
1710000104		22870538	12316584
1710000166		22870619	12316584
1710000167		22870539	12316584
1710000168	10090972882	22870445	12316454
1710000170	10090973235	22870442	12316454
1710000171		22870390	12314933
1710000172		22870456	12315688
1710001179		22870201	12315653
1710001181		22870121	12319717
1710002108		22870555	12319953
1710002120		22870547	12319953
1710002121		22870491	12319953

11. Click Next.

12. In the next window, we want all the data fields to be loaded, so click on the CSV file in the left-hand pane and using the arrow, click for all the columns that appear in the right-hand pane.

Table	Column
abcore_hampshire	uprn
abcore_hampshire	parent_uprn
abcore_hampshire	udprn
abcore_hampshire	usrn
abcore_hampshire	toid
abcore_hampshire	classification_code
abcore_hampshire	easting
abcore_hampshire	northing
abcore_hampshire	latitude
abcore_hampshire	longitude
abcore_hampshire	representative_point
abcore_hampshire	last_update_date
abcore_hampshire	single_line_address
abcore_hampshire	po_box
abcore_hampshire	organisation
abcore_hampshire	sub_building

13. Click Next.

14. In the next window, set the X Field dropdown list to *easting* and the Y Field dropdown list to *northing*.

View Points

Select which columns contain the relevant information. The X and Y Fields must be set, all of the other fields are optional

Point Configuration

X Field: easting#

Y Field: northing#

XY Units: ☒ Linear ☐ Angular m

☐ Create 'Empty' items for unusable coordinates

Optional Configuration

ID Field: (none)

Z Field: (none)

Z Units (linear): m

Overlay Configuration

Name: abcore_hamsphire

Theme: (none)

More Properties...

Finish Cancel

15. To set the coordinate reference system for the data, click the *More Properties...* button in the bottom right-hand side of the window.
16. Change the coordinates to *OSGB 1936.British National Grid* from the dropdown list.

View Points

Coordinates: OSGB 1936.British National Grid

Feature Table:

Scale: 1

Items: 0

Memory (bytes): 0

OK

Cancel

Properties...

17. Click *OK*.
18. Then click *Finish*.

Overlay Configuration

Name: abcore_hamsphire

Theme: (none)

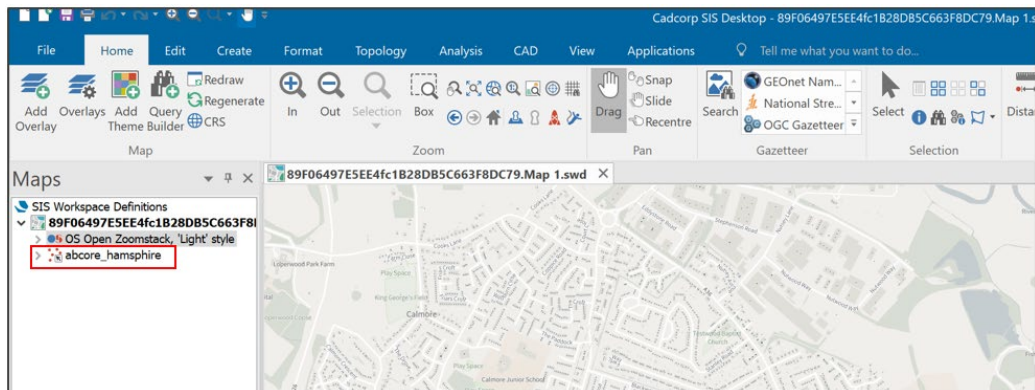
More Properties...

Finish Cancel

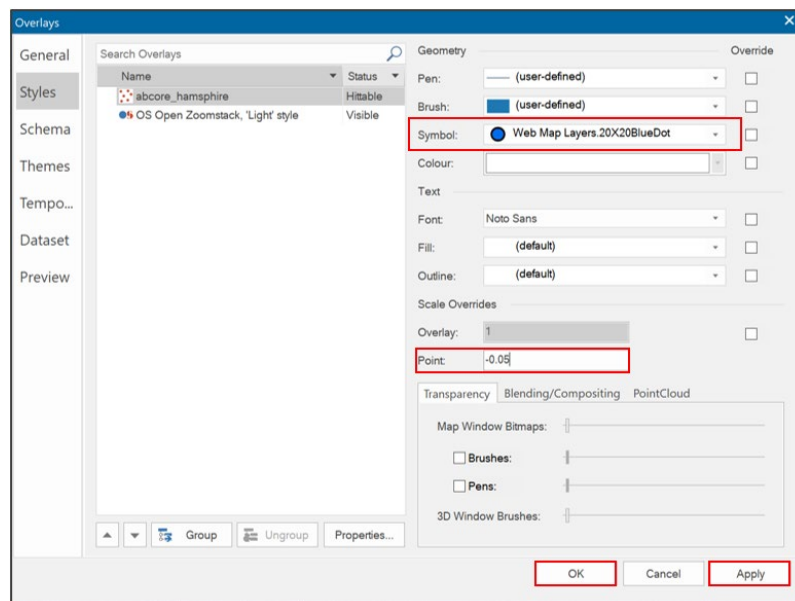
Displaying the address location

You may not see the AB_Core data displayed against the backdrop mapping in the main map window. This is because the default styling may have set the data to display in a form which is too small. To change this, follow these instructions.

1. Right click the AB_Core entry in the Maps pane and select *Properties*.

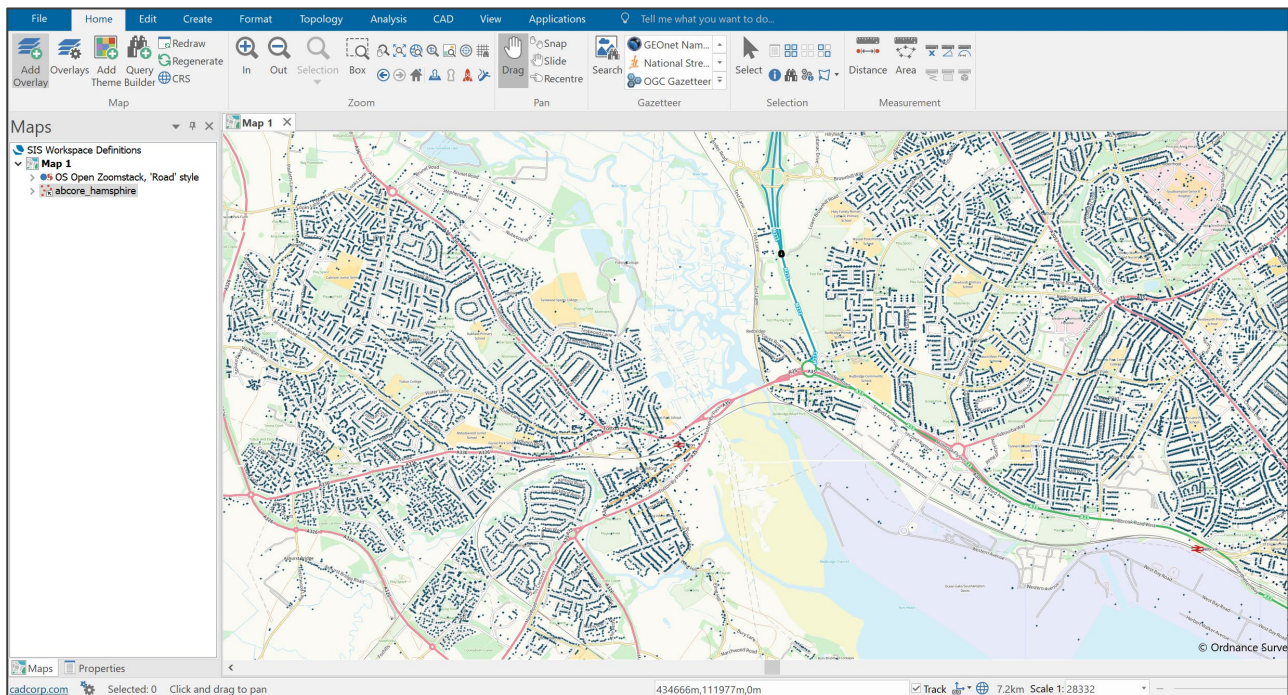


2. In this window, change the *Symbol* type from a dot to some sort of circle, and then change the *Point* size so that it moves closer to a value of 0 but still has a negative number. You should experiment to see what is most useful for your purpose.



3. Click *Apply* when satisfied, then click *OK* to close the window.

The data should now load into the map window and, depending on the map backdrop used, will look similar to the following example.



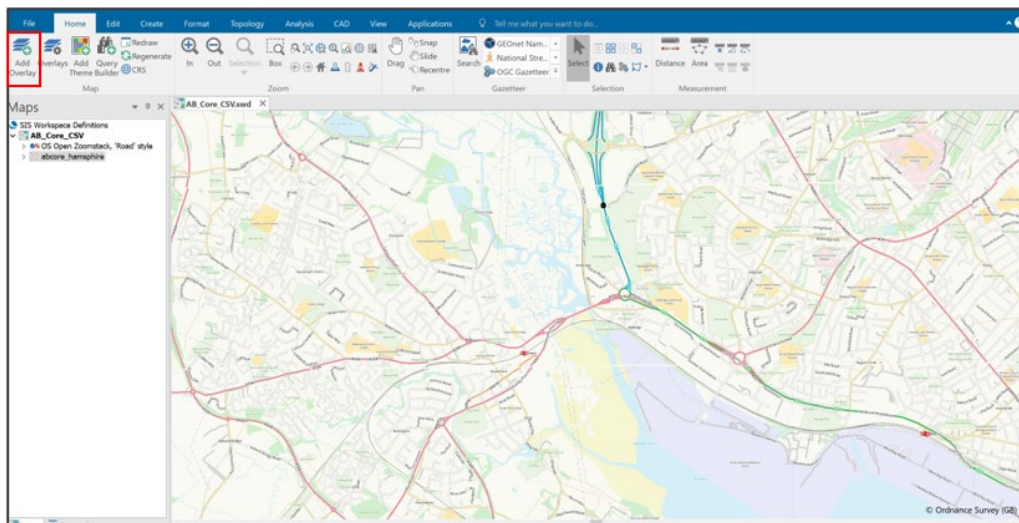
Save the project as an SWD document in CadCorp for later use. The data is now ready to be interrogated using the tools available in CadCorp.

3.5.2 Loading GeoPackage data

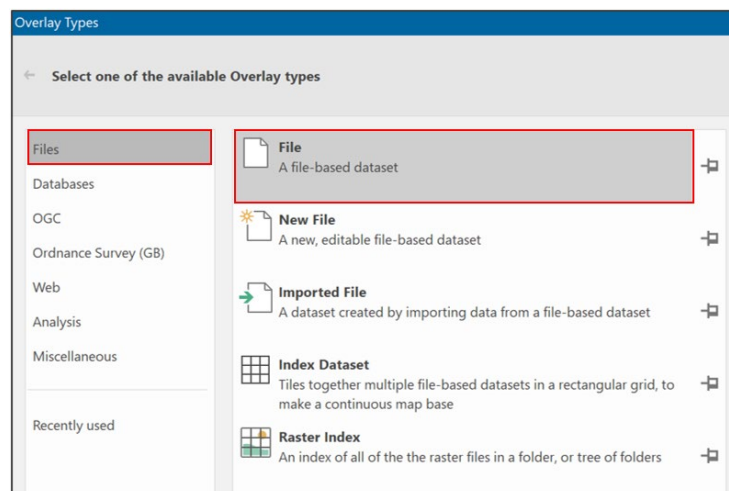
1. Launch CadCorp Map Modeller.

As was done in the CSV example in [Section 3.5.1](#), load a suitable map backdrop to provide context for the AB_Core data. Set the backdrop map to the *British National Grid* coordinate reference system. In the example, we have used the Roads Style version of the OS Open Zoomstack data as a backdrop.

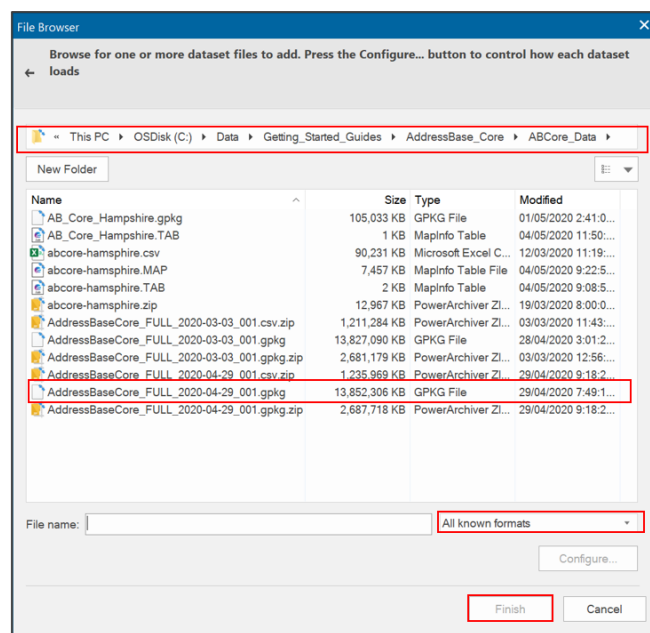
2. Click *Add Overlay* from the top ribbon menu.



3. In this instance, select *Files* in the left-hand window and select *File* from the top of the list on the right-hand side.



4. Click *Next*.
5. In the next window, browse to where the GeoPackage file holding the AB_Core data is located. The files of type box in the bottom right-hand dialog should be set to *All known formats*. Select the GeoPackage file and then click *Finish*.

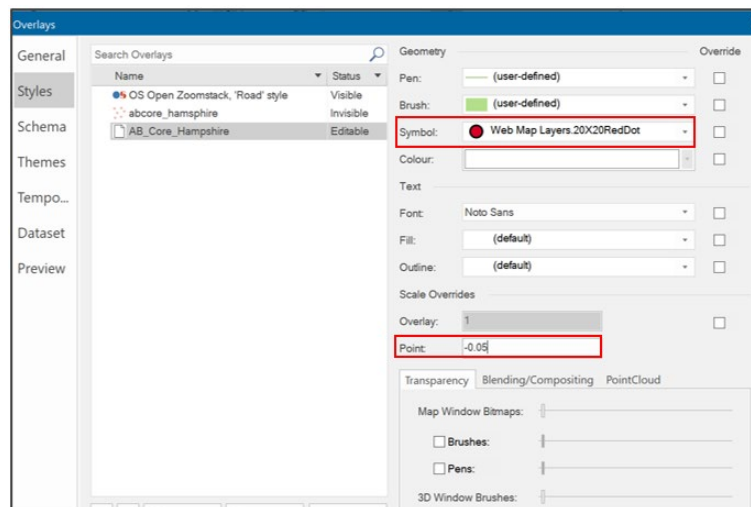


The data will now load into CadCorp Map Modeller and appear in the list of Maps on the left-hand side of the screen.

Displaying the address location

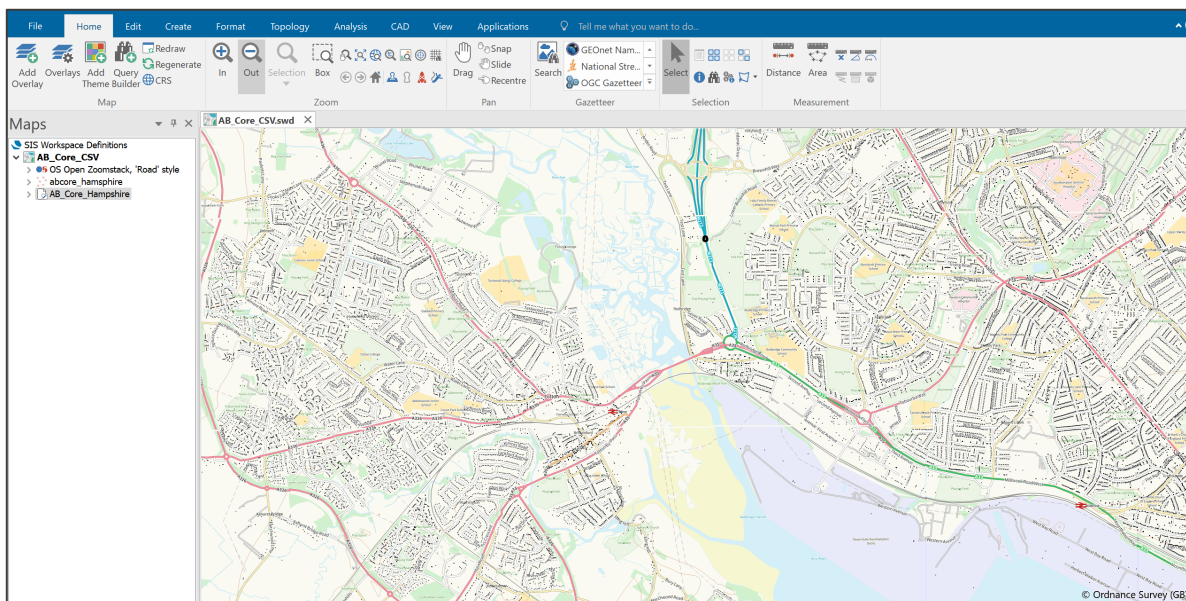
Once again, as with the CSV data in [Section 3.5.1](#), the styling may need to be changed to make the AB_Core data visible. The following steps outline how to do this.

1. Right-click the AB_Core GeoPackage entry and select *Properties* in the next window. Experiment with the type of styling to be applied to the layer.



2. Once satisfied, click OK.

In the preceding example image, a circle has been used as the style and a point size of -0.05 has been selected to make the data stand out and be more legible against the backdrop mapping.



The GeoPackage data now appears against the map backdrop and is ready for use within the application.

Once again, in the case of the GeoPackage format, there has been no requirement to specify the coordinate reference system as that information is stored within the GeoPackage data. However, the backdrop mapping should have been set to a coordinate reference system of *British National Grid*.

4. Loading AddressBase Core into a database

This section describes how to load the AddressBase Core product into some common databases.

4.1 Considerations

4.1.1 Software dependencies

It should be noted that ArcMap, ArcGIS Desktop and ArcGIS Server software do not support the BIGINT/NUMBER data type as an Object ID. Bear this in mind if the expectation is to use this data type directly with these ESRI products. An alternative method to facilitate using ESRI software is to store this data as a string and add a new Serial ID to act as the Object ID.

If you are loading AddressBase Core data directly into a database, you may need to increase the column length to accommodate language characters such as ^. Some databases treat this as an additional character and therefore if you define the column length according to our specification there is a chance the load may fail. Please bear in mind such adjustments may be required depending on the database you use to load the data.

4.1.2 UPRN deletions

It is important to note if a UPRN is deleted and then reinserted, this does not compromise the integrity of the UPRN and its use as a primary key. If a delete is issued for a UPRN, this does not mean it will not reappear in subsequent supplies.

There are several reasons this may happen:

- The record has moved in location more than once, moving it out of your area of interest (AOI; therefore the record is deleted) but then back into your AOI in the future. This could also occur if you alter your AOI.
- A record has failed data validation upon a change being made. This can result dependent on the change being made in the record being deleted and then reintroduced when the error is fixed by the data supplier.

If a UPRN is deleted, it will not be reallocated to a different property and it therefore remains the unique identifier for a property.

4.2 PostgreSQL

These steps describe how to load AddressBase Core into a PostgreSQL database using the CSV files.

These instructions are based on PostgreSQL version 10 and assume that you have set-up your database with the PostGIS spatial extension. It is recommended that you have basic understanding of database terminology before following this guide.

Where `<table_name>` or similar in `< >` is used, the entire string is to be replaced, for example:

```
COPY <table_name> FROM 'C:\Address\AddressBaseCore_FULL_2020-05-25_001.csv'
DELIMITER ',' CSV HEADER;
```

Becomes:

```
COPY addressbase_core FROM 'C:\Address\AddressBaseCore_FULL_2020-05-25_001.csv'
DELIMITER ',' CSV HEADER;
```

If referencing a schema, `<schema_name>`. can be placed in front of any `<table_name>`, for example:

```
COPY ab_core.addressbase_core FROM 'C:\Address\AddressBaseCore_FULL_2020-05-25_001.csv'
DELIMITER ',' CSV HEADER;
```

Note – If you are using version 11 or above, there is currently a glitch which will not allow a bulk load using a CSV. Therefore, it is advised to use the guidance available in [Section 3](#) to load the data into a GIS package and then retrospectively add it to your database.

1. Open PGAdmin tool (this can be found on the Windows Start Menu > PostgreSQL).
2. Either connect to an existing database or create a new database. It is recommended that the encoding is set to *UTF-8*.
3. Open the public schema (although in a production environment, it is advised to use a different schema) and create the tables using the following steps:
 - a. Open the SQL query tool.
 - b. Download the AddressBase Core SQL file from the AddressBase_Core folder:
https://github.com/OrdnanceSurvey/AddressBase/tree/master/Loading_Scripts/PostgreSQL.
 - c. This SQL file can be opened in a text editor, and the SQL scripts can be within copied and pasted into the SQL query tool within PostgreSQL. This script creates a table called `addressbase_core`; you may choose a different naming convention.
4. Once the table has been created, the data can be loaded into each table using the SQL COPY. Adding the CSV option as the first line contains a header record for each table.

The path and file name may need to be changed to reflect your data set-up:

```
COPY <table_name> FROM 'C:\Address\AddressBaseCore_FULL_2020-05-25_001.csv'
DELIMITER ',' CSV HEADER;
```

5. Once loaded, you may want to add Primary Keys to the data. However, these can only be added on columns where the data values are unique. Where there are no unique data values, an index may be

added which will aid searching. The UPRN, UDPRN, USRN and TOID provide the only unique value in AddressBase Core.

Primary Keys are added using the following steps:

- a. Right-click on the table name and select *Properties*.
 - b. Select the *Constraints* tab.
 - c. Click the + *symbol* to add a new primary key.
 - d. Click the *edit icon*.
 - e. Enter a name to call the key under the General tab (for example, *Key1*).
 - f. Under the Definition tab, select *UPRN* or any other unique value from the dropdown under Columns.
 - g. Click *Save*.
6. You can also index the data by following these steps:
- a. Right-click on the table name and select *Create > Index*.
 - b. Under the General tab, enter a name (for example, *Idx1*).
 - c. Under *Definition tab > Columns*, click the + *symbol*.
 - d. Select the *UPRN*, for example, or any other unique value.
 - e. Click *Save*.

4.2.1 Converting coordinates to geometry

A PostGIS extension is required to create geometries. The AddressBase products contain both British National Grid (BNG) and ETRS89 coordinates. The following SQL shows how to create a column for BNG but can be altered to utilise the ETRS89 data.

1. Add a geometry column called *geom* to make the data usable in a GIS:

```
SELECT AddGeometryColumn ('<schema_name>', '<table_name>', 'geom', 27700, 'POINT', 2);
```

2. Load the data into your new geometry column:

```
UPDATE <schema_name>.<table_name> SET geom = ST_GeomFromText('POINT(' || easting || ' ' || northing || ')', 27700 )
```

This sets the *geom* column in the *BLPU* table to equal the values from the *easting* and *northing* columns, with the spatial reference defined as 27700.

3. Create a spatial index (for example, *idx_abcore_geom*) on the data using:

```
CREATE INDEX <index_name> ON <schema_name>.<table_name> USING gist(geom)
```

This adds the index name *idx_abcore_geom* to the same table on the *geom* column.

4.3 Microsoft SQL Server

The following instructions assume basic knowledge of Microsoft SQL Server.

Note – There are many ways to load AddressBase products into Microsoft SQL Server; this is just one suggested method for guidance.

1. Open the *SQL Server Management Studio (SSMS)*.
2. Right-click on the database you are loading into and select *Properties*.
3. Select *Options* on the left-hand side.
4. Expand the dropdown box for *Recovery Model* and select *BULK-LOGGED*. This minimises the logfile size, otherwise the default logging for Microsoft SQL Server can cause logfiles to grow over 20GB and this can cause issues with loading.
5. Open the *SQL Server Management Studio (SSMS)* and right-click your database from the left-hand panel.
6. Navigate to *Tasks* and click *Import Data*. This will open the *SQL Server Import and Export Wizard*.
7. Click *Next*.
8. On the next screen, change your *Data Source* to *Flat File Source*.
9. Use the *Browse* button to navigate to and select your CSV file. If you cannot see your files, ensure the bottom right dropdown box has CSV files (*.csv) selected.
10. Click *Open*.
11. Ensure the *Column names in the first data row* is ticked.
12. Check that the *Text Qualifier* is set to a double quote (“). This is to make sure the quotations in the raw data supply are removed upon loading but that the data remains intact.
13. On the left-hand side of this screen, select *Columns* and check that the *Column delimiter* is set to *Comma*.
14. On the left-hand side of the screen, select *Advanced*.
15. For each column of data you are loading, you will need to specify a *Data Type*. The Microsoft SQL Server loader defaults each column to a *String*. The correct *Data Types* for each column are given in the [AddressBase Core Technical Specification](#).
16. Once you have changed the column types to match the correct *Data Types* listed in the *Technical Specification*, click *Next*.
17. Check that your table is going to be imported into the correct database, then click *Next*.
18. On this screen, you can edit the default table name that Microsoft SQL Server has chosen by clicking in the destination box. For example, for AddressBase Core renaming to *[dbo].[ADDRESSBASE_CORE]*

19. Select *Edit Mappings* in the bottom right-hand corner.
20. In the new window, you must remove the tick in the checkbox against the *UPRN column*, which needs to be the Primary Key of the table. Click *OK* once the Primary Key alterations have been completed.
21. Click *Next*. On this screen, you can check that the Source column and Destination columns are correct.
22. Click *Next*. A summary of your import will appear. If you want to continue, click *Finish*.
23. A report will be generated as your data is imported. *Success* should appear at the top once complete.
24. You may need to right-click on your database and click *Refresh* to see your new table listed.

4.3.1 Setting Primary Keys

To create a Primary Key field you can run an SQL statement, such as the following example for AddressBase Core. (Note that the columns you are creating these constraints on cannot be null or allowed to be null.)

```
alter table dbo.ADDRESSBASE_CORE  
add primary key ([UPRN]);
```

4.3.2 Creating the point geometry

You can also create point geometry using the Eastings and Northings or the Latitude and Longitude coordinate values. This is achieved by running the following SQL statement:

```
alter table dbo.ADDRESSBASE_CORE  
add geometry_column as geometry::Point([easting],[northing], 27700);
```

Note – This is using British National Grid coordinates, with 27700 representing the spatial reference of the data. To use the Latitude and Longitude coordinate, the spatial reference should be set to 4258 for ETRS89.

5. AddressBase Core GB COU implementation guidance

5.1 Introduction

All the AddressBase products are available as a full supply or a COU. A COU means you will only be supplied with the features which have changed since your last supply. The following sub-sections provide guidance on how you could potentially manage a COU supply of AddressBase Core using PostgreSQL.

Where <table_name> or similar in < > is used, the entire string is to be replaced, for example:

```
COPY <table_name> FROM 'C:\Address\ AddressBaseCore_COU_2020-06-03_001.csv'  
DELIMITER ',' CSV HEADER;
```

Becomes

```
COPY addressbase_core_cou FROM 'C:\Address\ AddressBaseCore_COU_2020-06-03_001.csv'  
DELIMITER ',' CSV HEADER;
```

If referencing a schema, <schema_name>. can be placed in front of any <table_name>, for example:

```
COPY ab_core.addressbase_core_cou FROM 'C:\Address\ AddressBaseCore_COU_2020-06-03_001.csv' DELIMITER ',' CSV HEADER;
```

5.2 Types of change

At a high-level, there are three types of change found within COU:

- Deletes (CHANGE_TYPE 'D') are objects that have ceased to exist in the product since the last product refresh.
- Inserts (CHANGE_TYPE 'I') are objects that have been newly inserted into the product since the last product refresh.
- Updates (CHANGE_TYPE 'U') are objects that have been updated in the product since the last product refresh.

5.3 High-level COU implementation model

Figure 1 shows how to implement AddressBase Core COU within a database.

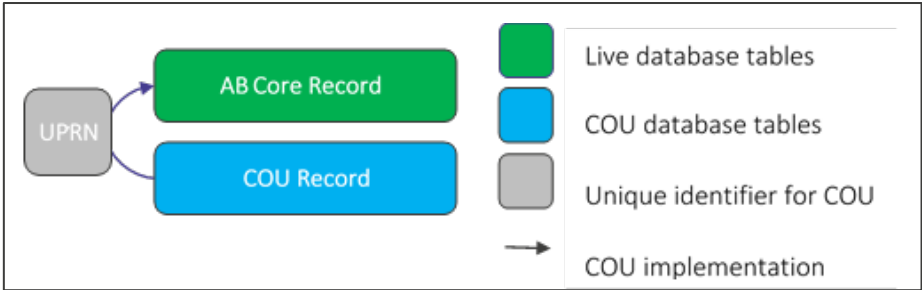


Figure 1: High-level COU implementation model.

5.4 High-level COU implementation model – with archiving

Before a COU is applied, there may be a business requirement to archive existing address records. Figure 2 shows how to implement archiving with an AddressBase Core COU within a database.

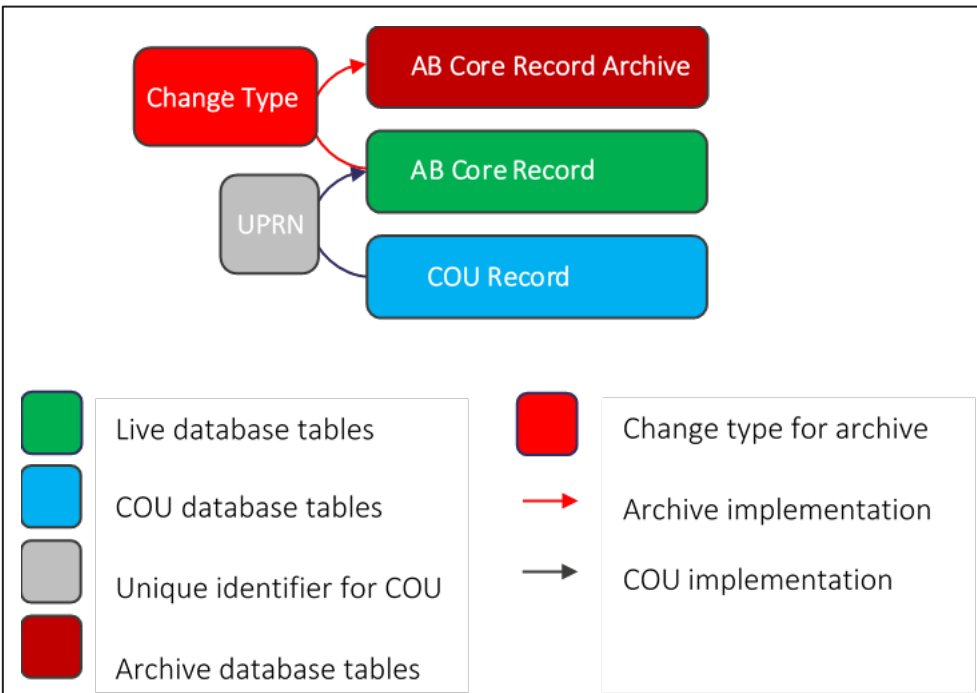


Figure 2: High-level COU implementation model on how to create archive tables and apply a COU.

5.5 Applying COU to tables

Within AddressBase Core there will be no records with the same UPRN. This can be tested by checking the number of records that have the same UPRN. The following SQL code would notify you of any duplicates.

```
SELECT uprn, COUNT(uprn) AS NumOccurrences
FROM <table_name>
GROUP BY uprn
HAVING ( COUNT(uprn) > 1 );
```

This query should return 0 rows, and this confirms that there are no duplicates. As there are no duplicate records, we can use the UPRN to apply the COU.

5.5.1 With archiving

Where there is a business requirement to keep the records that are being Updated and Deleted in a separate archive table, the following SQL will create an Archive Table. It will populate with records that are being Updated and Deleted from the live AddressBase Core table.

The following command creates an archive table of the records that are being updated and deleted from the existing table, for example, *addressbase_core_archive*.

1. First, apply the theory from the steps in [Section 4.2](#) to load the COU CSV into a new or existing table, for example, *addressbase_core_cou*.
2. If this table already exists, you can simply use `INSERT INTO <abcore_archive_table_name>`, rather than `CREATE TABLE <abcore_archive_table_name> AS`.

```
CREATE TABLE <abcore_archive_table_name> AS SELECT * FROM <master_abcore_table_name>
WHERE uprn IN (SELECT uprn FROM <abcore_cou_table_name> WHERE change_code != 'I');
```

3. The following command then deletes the records from the existing table, which are either updates or deletions.

```
DELETE FROM <master_abcore_table_name>
WHERE uprn IN (SELECT uprn FROM <abcore_cou_table_name> WHERE change_code != 'I');
```

4. The following command then inserts the new insert records and the new updated records into the live BLPU table.

```
INSERT INTO <master_abcore_table_name>
SELECT * FROM <abcore_cou_table_name> WHERE change_code != 'D';
```

5. You can check that this has been successful by re-checking that there are no duplicate UPRNs.

5.5.2 Without archiving

If there is no requirement for archiving, follow these steps:

1. First apply the theory from the steps in [Section 4.2](#) to load the COU CSV into a new or existing table, for example, *addressbase_core_cou*.
2. Now, delete the existing records that will be updated, for example, Updates and Deletions.

```
DELETE FROM <master_abcore_table_name>  
WHERE uprn IN (SELECT uprn FROM <abcore_cou_table_name> WHERE change_code != 'I');
```

3. Insert the new updated records.

```
INSERT INTO <master_abcore_table_name>  
SELECT * FROM <abcore_cou_table_name> WHERE change_code != 'D';
```

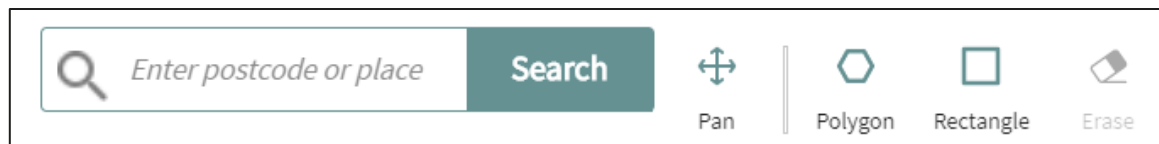
4. You can check that this has been successful by re-checking that there are no duplicate UPRNs.

6. Tiled orders

Tiled orders allow you to select a small region of Great Britain (GB), rather than having to order the whole of GB if you so wish. Ordering tiles, as opposed to full GB coverage, can be beneficial as the amount of data is reduced. This would reduce the size of your data storage and reduce the time it takes to process the data.

AddressBase Core tiles can be downloaded through Ordnance Survey's download service. A full breakdown on how to access this service is outlined in [Section 2.3](#). To order tiles:

1. Access the OS orders site and select *AddressBase Core – 5km DOWNLOAD*.
2. Select either a self-drawn polygon, a rectangle or a postcode/place. This can be found in the panel above the map (as shown in the next image). Once the area is selected, proceed to place your order.



Dependent on whether you are a PSGA customer or an OS Partner, the tiles are supplied as either GeoPackage or CSV.

Once an AOI polygon is drawn, you will be provided with all 5km tiles that intersect the specified area (see Figure 3). For a GeoPackage download, you will receive tiled data which has been incorporated into one single GeoPackage file. For CSV tile supplies, individual 5km tiles will be supplied for each tile which intersects your AOI.

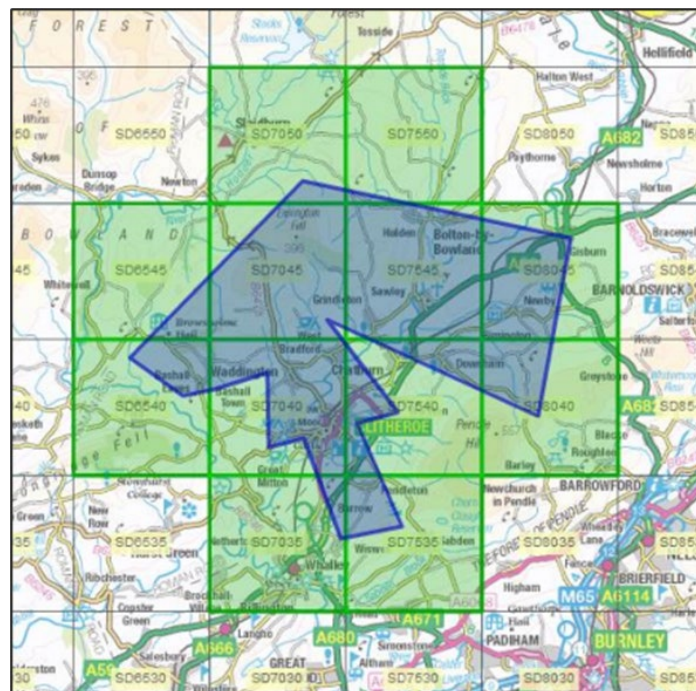


Figure 3: An example of what is supplied when completing a tile order. An area of interest is drawn (blue lines) and a tile is provided for anywhere the drawn area of interest intersects (green lines).

Figure 4 illustrates the format, coverage and supply type of AddressBase Core, specifically highlighting the tile supply options. Each supply type will be covered in the sub-sections that follow, and they are also highlighted in Figure 4 with relevant sub-section numbers provided (for example, 6.1).

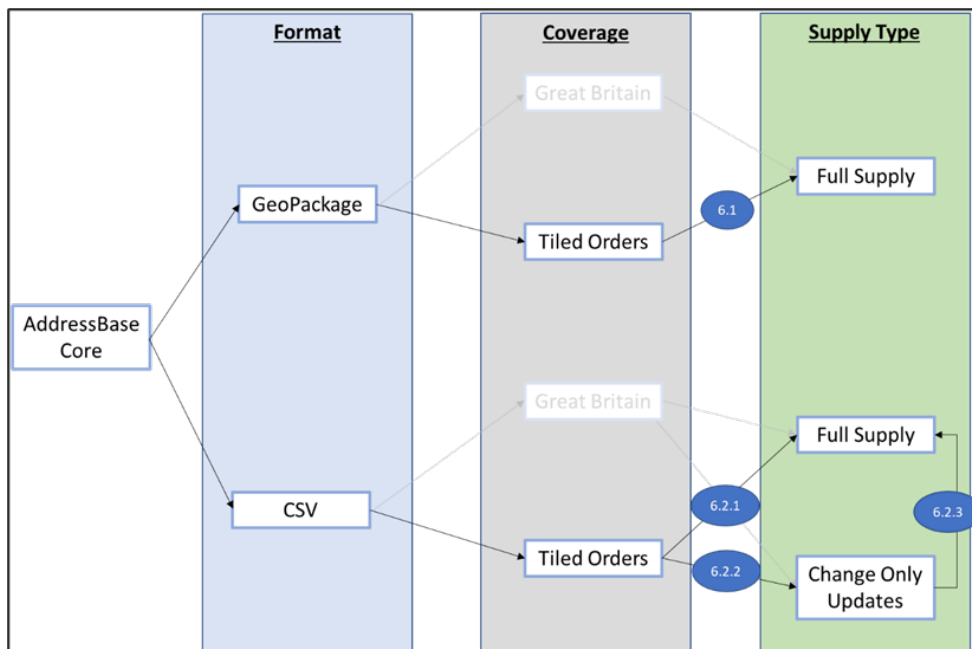


Figure 4: An illustration of AddressBase Core format, coverage, and supply types specifically for tile supplies.

6.1 GeoPackage

Both GB coverage and tiled supply of GeoPackage is produced as a full supply only, as shown in Figure 4. Both product variants result in you receiving one consolidated GeoPackage file for your order.

To use this in your relevant geospatial software, please refer to [Section 3](#), which provides information for implementing GeoPackage into ArcGIS Pro, ArcMap, QGIS, MapInfo Professional and CadCorp Map Modeller.

6.2 CSV

Tile orders are also an option for CSV supplies of AddressBase Core. The CSV is implemented as 5km tiles; once downloaded, an individual CSV will be produced for each tile. This is the case for both full supply and COU. Each CSV will also be provided with a header; therefore, this must be considered if you wish to consolidate multiple individual tiles into one single file.

A use case for taking tiled coverage is to have a smaller data holding than taking all of GB if only a small subset of addresses within GB is needed. If you are planning on using the tile supplies for COU purposes, we need to understand the data structure of the full supply and COU files you will download.

If you select to receive COU tile supplies, if any record within a selected 5km tile is changed between two releases of data (each week), you will receive the entire 5km tile in your next supply containing all of the latest live records for that tile.

As can be seen in Table 1, the original full supply contains the address *17 THE BROADS, PAMPHILL, WIMBORNE, BH21 4DR*, whilst the next COU data does not (no data represented as a pink cell). However, it does include an additional record: *37 THE BADGERS, PAMPHILL, BH21 4SH*. This means that the *17 THE BROADS* address has been deleted between the two releases, and *37 THE BADGERS* is a new address.

Table 1: Example of full supply and COU data to provide an explanation as to the pre-processing method.

Original full supply	COU records	COU change type
BUNGALOW, BLANDFORD ROAD, WIMBORNE MINSTER, BH21 4DS	BUNGALOW, BLANDFORD ROAD, WIMBORNE MINSTER, BH21 4DS	I (INSERT)
17 THE BROADS, PAMPHILL, WIMBORNE, BH21 4DR	No data supplied	Not applicable
33 THE BROADS, PAMPHILL, WIMBORNE, BH21 4DR	33 THE BROADS, PAMPHILL, WIMBORNE, BH21 4DR	I (INSERT)
No data supplied	37 THE BADGERS, PAMPHILL, BH21 4SH	I (INSERT)

To implement COU, it is advisable to process the full supply and the COU data files into a common structure to be used in conjunction with SQL, to keep the database up to date. Therefore, a tilename column should be appended onto the full supply and COU data when the CSVs are merged, as shown next.

AddressBaseCore_COU_2020-01-30_SU2075.csv.zip

POST_TOWN	ISLAND	POSTCODE	DELIVERY_POINT_SUFFIX	GSS_CODE	CHANGE_CODE	TILENAME
		SN4 0HJ	1A	E06000030	I	SU2075
MARLBOROUGH		SN8 1SZ	1A	E06000054	I	SU2075
MARLBOROUGH		SN8 1SZ	1B	E06000054	I	SU2075

Ordnance Survey provides an FME Workbench and NodeJS script to help the end-user to pre-process the data as described in the following sub-sections. The FME workbench can be found [here](#), while the NodeJS script can be found [here](#). Both are provided with a README file with instructions on usage. These **do not** require you to unzip the data before processing.

The data, either full supply or COU, should now be combined in one CSV file, under one header, with an appended tilename column. Once the data has been pre-processed, it can be loaded into any database. The next sub-sections will detail the different loads of full supply and COU.

6.2.1 Full supply

Once the full supply CSV has been pre-processed as described in [Section 6.2](#), the COPY load method can be used to load the data into your primary database table:

```
COPY addressbase_core FROM 'PATH TO PROCESSED FULL SUPPLY' DELIMITER ',' CSV HEADER;
```


In this example, *addressbase_core* is the name of the table. You may use a different name. To use this table in a geospatial setting, geometry columns will need to be inserted using the following SQL:

```
SELECT AddGeometryColumn (<schema_name>, 'addressbase_core', <column_name>, 27700,  
'POINT', 2);  
COMMIT;
```

```
UPDATE addressbase_core SET geom = ST_GeomFromText('POINT(' || easting || ' ' || northing || ')', 27700 )  
COMMIT;
```

6.2.2 COU supply

A similar method as stated in Section 6.2.1 can be used to insert the COU data into a database. Similarly, *addressbase_core_cou* is the name given to the database table. You may use a different name.

```
COPY addressbase_core_cou FROM 'PATH TO PROCESSED COU CSV' DELIMITER ',' CSV  
HEADER;
```

```
SELECT AddGeometryColumn (<schema_name>, 'addressbase_core_cou', <column_name>,  
27700, 'POINT', 2);  
COMMIT;
```

```
UPDATE addressbase_core_cou SET geom = ST_GeomFromText('POINT(' || easting || ' ' ||  
northing || ')', 27700 );  
COMMIT;
```

6.2.3 Application of COU to the primary table

1. If you are applying COU to your primary table, you should now have two tables in your selected database:
 - A primary table which contains some out-of-date data.
 - A COU table with the live data.
2. To update your primary table, there are two basic steps to follow using SQL commands:
 - Delete all rows that contain tilenames that match the tilenames of the incoming COU.
 - Insert all rows from the COU table to the primary table.

The following SQL commands will complete the application of COU into the primary table:

- a. Index the tilename column on to the primary table:

```
CREATE INDEX ON addressbase_core (tilename);
```

- b. Index the tilename column on to the COU table:

```
CREATE INDEX ON addressbase_core_cou (tilename);
```

- c. Delete from the primary table any records which have a tilename that matches a tilename from your COU table:

```
DELETE FROM addressbase_core WHERE tilename IN (SELECT DISTINCT(tilename) FROM  
addressbase_core_cou);  
COMMIT;
```

- d. Insert the live COU data into the primary table:

```
INSERT INTO addressbase_core_cou SELECT * FROM abcore.abcore_cou;  
COMMIT;
```