

GETTING STARTED GUIDE

v1.7 – March 2016

AddressBase products



Ordnance Survey

PREFACE

Purpose and disclaimer

This 'getting started' guide is provided for guidance only and does not constitute any warranty, representation, undertaking, commitment or obligation (express or implied) about the product or its suitability for any particular or intended purpose. Any warranties, representations, undertakings, commitments and obligations given by Ordnance Survey about the product and/or its suitability for any particular or intended purpose are set out in your customer contract. It is your responsibility to ensure that this product is suitable for your intended purpose.

Ordnance Survey does not accept any liability (whether for breach of contract, negligence or otherwise) for any loss or liability you or any third party may suffer in relying on this guide and any guidance, suggestion, advice or explanation provided in it. Any liability that Ordnance Survey has to you in relation to the product, its supply, use, accuracy, data supplied, functionality or any other liability arising out of, or in connection with, the product is limited as set out in your customer contract.

We may change the information in this guide at any time without notice.

We do not accept responsibility for the content of any third-party websites referenced or accessed.

Data copyright and other intellectual property rights

Ordnance Survey or, where applicable, its suppliers (including the Crown) owns the intellectual property rights in Ordnance Survey digital map data.

Full details of the terms and conditions under which Ordnance Survey digital map data may be processed and/or manipulated or copied by a customer – whether or not for use on PCs or workstations or for making hard copies – are available from the Customer Service Centre, please see Further Information. You should check the terms and conditions with us before using the data. It is also the responsibility of the holder of the digital map data to ensure that any plotted or printed output contains the required copyright and database acknowledgements in a conspicuous position.

The data in AddressBase® is provided by GeoPlace®, a limited liability partnership between the Local Government Association and Ordnance Survey.

© Local Government Information House Limited copyright and database rights 2016

© Hawlfraint a hawliau cronfa ddata cyfyngedig Tŷ Gwybodaeth ar Lywodraeth Leol 2016

PAF® data are copyright material of Royal Mail® Group Limited.

Contains information provided by the Valuation Office Agency under the Open Government Licence and other data provided under the Open Government Licence v3.0.2.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

1 ADDRESSBASE DATA APPLICATIONS

Three products have been designed to meet distinct customer requirements. All are derived from a single database, which captures data from multiple authoritative address sources. The source data is collated, verified and quality assured by GeoPlace. This database is then used to create the AddressBase products.

1.1 Examples of applications for AddressBase products

Product name	AddressBase Premium	AddressBase Plus	AddressBase
Suggested application	Planning, mailing, postal delivery, analysis, statistics, strategic decision-making, address-matching and verification, customer relationship management (CRM), web mapping and live 'front line' operational use.	Planning, mailing, postal delivery, analysis, statistics, strategic decision-making, address-matching and verification, CRM and web mapping.	Mailing and postal delivery.
Benefits	<p>Key building block for 'e-government':</p> <ul style="list-style-type: none"> • reduces duplication on effort on maintaining address information across multiple departments; and • facilitates data-sharing between departmental systems. <p>Provides objects without a postal address (OWPA) records and multiple address references.</p> <p>Connectivity – the Unique Property Reference Number (UPRN) as the key identifier for a property/address that enables systems to share information about the same entities without the need to match multiple datasets.</p> <p>Created from a central hub managed by GeoPlace to bring all the address information together to ensure data management and update consistency.</p>		

2 WHAT DO I NEED TO USE THIS DATA?

2.1 System requirements

AddressBase data is designed for use as a digital map within geographical information systems (GIS) and database systems. For details of Ordnance Survey's licensed partners, who can incorporate the AddressBase products in their systems, please see the systems/software page on the Ordnance Survey website.

Ordnance Survey does not recommend either suppliers or software products, as the most appropriate system will depend on many factors, such as the amount of data being taken, resources available within the organisation, the existing and planned information technology infrastructure and last but by no means least, the applications that AddressBase products can be used for.

However, as a minimum, the following elements will be required in any system:

- a means of reading the data, either in its native format, or by translating it into a file format or for storage in a database;
- a means of storing and distributing the data, perhaps in a database or through a web-based service; and
- a way of visualising and querying the data, typically a GIS.

2.2 Backup provision of the product

You are advised to copy the supplied data to a backup medium.

2.3 Typical data volumes

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

Uncompressed file sizes for the full supply of England, Wales and Scotland are as follows:

2.3.1 Uncompressed comma-separated values (CSV)

- AddressBase Premium is 29 Gb
- AddressBase Plus is 13 Gb
- AddressBase is 4.9 Gb

2.3.2 Uncompressed Geography Markup Language (GML)

- AddressBase Premium is 133 Gb
- AddressBase Plus is 62 Gb
- AddressBase is 25 Gb

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

3 WHAT IS ON THE CD/DVD OR IN THE DATA DOWNLOAD?

3.1 Supply options:

3.1.1 CD/DVD

When a customer receives an order via hard media (DVD), the following files will be supplied if the supply is not a Managed Great Britain Set (MGBS):

- data
- doc
- readme.txt

Within the data directory, data files will be found in their compressed format.

The doc directory contains both standard and product-specific document files that describe what has been supplied in the order, including:

- Medialist.txt – outlining the contents of the media.
- Disccare.txt – outlining how to care for your media.
- Report.txt – outlining the order details.
- readme.txt – this document provides guidance notes on matters such as the file name referencing used and the directory structure of the DVD.

3.1.2 CD/DVD Supply of Managed Great Britain Sets (MGBS)

When a customer receives an order of a Managed Great Britain Set (MGBS) via hard media (DVD) the following files will be supplied:

- data
- doc
- resources
- readme.txt

There are a number of items contained within your supply:

- Data folder – contains all of your data supply.
- Doc folder – contains the Medialis.txt file. This file outlines the contents of the data you have been supplied.
- Resources folder – contains lookup tables for the local custodian code and AddressBase classification scheme as well as the Header files for the product.
- The readme.txt – this document provides guidance notes on matters such as the file name referencing used and the directory structure of the DVD.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

3.1.3 File Transfer Protocol (FTP)

With an FTP order, the same information is supplied as in section 3.1.1; but the file names will be slightly different, reflecting the FTP order number.

3.1.4 Download

Public Sector Mapping Agreement (PSMA) customers and One Scotland Mapping Agreement (OSMA) customers can download their geographic chunk data via our download service.

When you click 'Download data', you will be required to enter a password to access the PSMA members' area. On successful entry to the download service, you will be able to view all of your orders in the members' area and download your data.

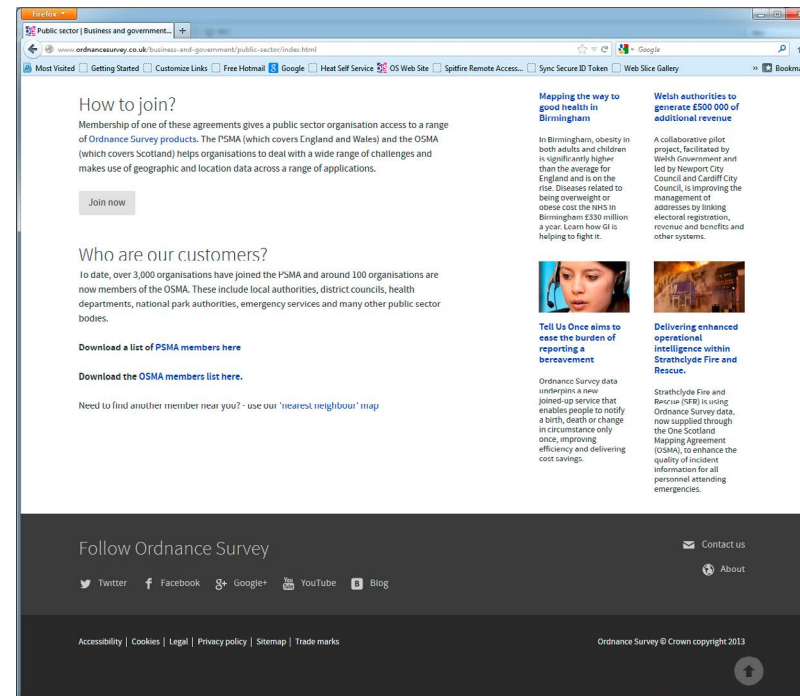


Figure 1: download data from our website

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

If you have ordered your data from our online portal you will be sent an email with a link to a download page.

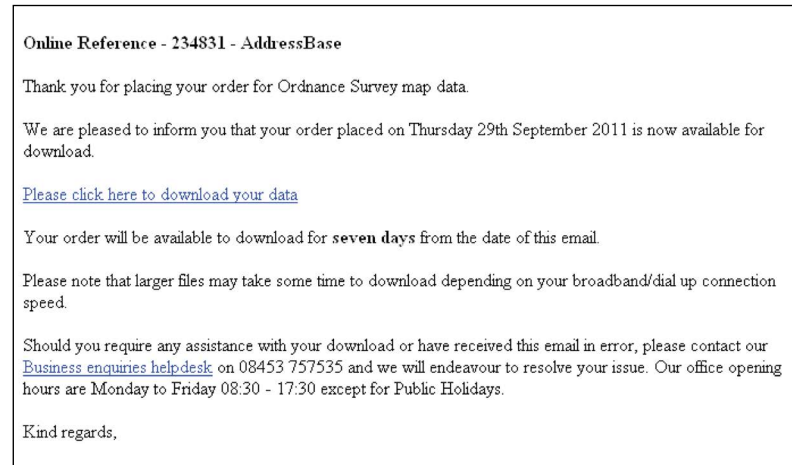


Figure 2: download data via an email link

Within the PSMA members' area, you can order and download the data that you require, by clicking on 'Order Data' found under the 'Map Data' heading.

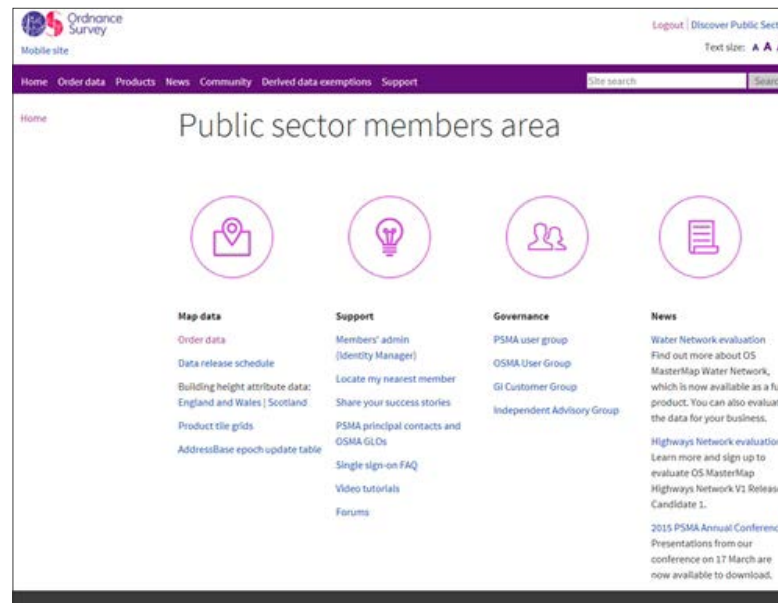


Figure 3: PSMA members' area

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Once you have selected 'Order Data' you will be presented with the following screen, from here you can manage all of your orders including those for AddressBase.

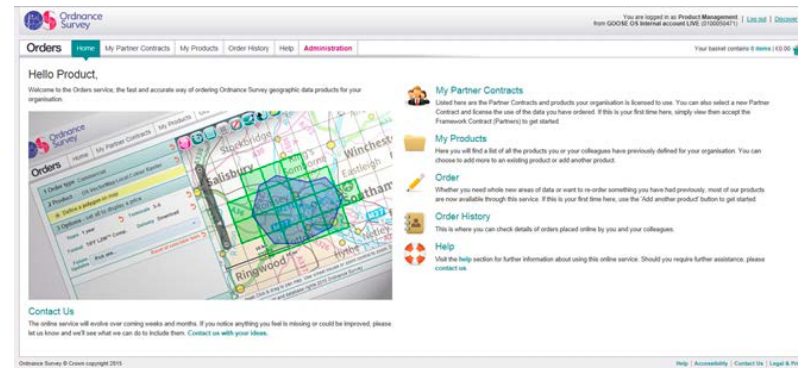


Figure 4: Order page accessed from within the PSMA area

When you have placed an order for a product, the data will become available as a series of zipped data files. To unzip these files, please see Chapter 3.3 below.

3.2 Chunked files

The data is supplied as a number of chunked files that cover your selected area. These files are named according to the convention detailed below.

When you open your data, you will see a series of zip folders.

3.2.1 Non-geographic chunks

For example:

AddressBasePremium_FULL_2011-07-29_001_csv.zip (Full supply of CSV)

or

AddressBasePremium_COU_2011-07-29_001_gml.zip (Change-only update supply of GML)

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

3.2.2 Geographic chunks

For example:

AddressBasePremium_FULL_2011-07-29_TQ2020_csv.zip (Full supply of CSV)

or

AddressBasePremium_COU_2011-07-29_TQ2020_gml.zip (Change-only update supply of GML)

3.3 How do I unzip the files?

The AddressBase GML and CSV data is supplied in a compressed form (zip). Some software can access these files directly; others will require it to be uncompressed. To uncompress the zipped data files (.zip extension), use an unzipping utility found on most PCs, for example, WinZip®. Open-source zipping/unzipping software can be downloaded from the Internet, for example, 7-Zip.

3.4 Unzipped

When the files are unzipped they will appear as follows:

3.4.1 Non-geographic chunks

AddressBasePremium_2011-07-29_001.csv

3.4.2 Geographic chunks

AddressBasePremium_2011-07-29_NC4040.csv

These CSV files are now ready for use.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

4 MANAGING THE CSV DATA

The technique for managing AddressBase CSV data is determined by which of the three products is taken: AddressBase, AddressBase Plus or AddressBase Premium.

If using AddressBase or AddressBase Plus data, refer to chapter 4.1. If using AddressBase Premium data please refer to chapter 4.2.

4.1 AddressBase and AddressBase Plus

4.1.1 Merging multiple AddressBase or AddressBase Plus CSV files

For AddressBase and AddressBase Plus data – using the technique described in Chapter 3.3, unzip all the CSV files into a single folder, for example, C:\AddressBase_Data or C:\AddressBase_Plus_Data.

Please note: ensure there are no spaces in your folder structure as per the example given.

It may be beneficial to merge all CSV files together to ensure that the user does not have to follow the import procedure for each of the individual files, which can be time-consuming and repetitive. The user can use any technique they feel comfortable with to merge all the individual CSV files in to a single file. This could include doing it manually using a text editor such as Notepad or TextPad (though this is very time-consuming), using a .bat batch file, or an MS-DOS® command.

To use the batch function:

- Copy the following text and paste it into a new Notepad document: copy *.csv mergedABdata.csv

Please note: mergedABdata.csv is the output name of the merged file which will be created. Therefore this can be any user defined file name with the extension .csv

- Save the Notepad document with the file extension .bat (for example, mergedABdata.bat) in the same directory as the CSV files unzipped in Chapter 3.3 (for example, C:\AddressBase_Data).
- Close the .bat file, and navigate to the directory where it was saved (for example, C:\AddressBase_Data). Double-click on the .bat file (for example, mergedABdata.bat) and an MS DOS window will appear. Once the process is complete, the MS-DOS screen will close automatically.
- If you look in the directory containing the AddressBase CSV files, and batch file (for example, C:\AddressBase_Data), it can be seen that there is now an additional single file called mergedABdata.csv or the user defined file name you picked when creating your batch file.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

4.1.2 Appending a header file to AddressBase and AddressBase Plus CSV

The three AddressBase CSV products, AddressBase, AddressBase Plus and AddressBase Premium all contain different attributes. This means there is a separate header file for each of these. Header files for each product are supplied by Ordnance Survey and can be found on the relevant product pages (the links can be found below) or if you receive a Managed Great Britain Set (MGBS) you can find the Header files on your DVD in the resources folder. Download the Header file that corresponds to the product that has been supplied:

- **AddressBase**
- **AddressBase Plus**

Paste the .csv header file contained within the zip folder into the same folder as the merged AddressBase.csv file created in Chapter 4.1.1.

Copy the appropriate version of the following text and paste it into a new Notepad document:

AddressBase

copy AddressBase_Header.csv+mergedABdata.csv AB_Data.csv

AddressBase Plus

copy AddressBasePlus_Header.csv+ mergedAB_Plusdata.csv AB_Plus_Data.csv

Please note: mergedABdata.csv is the file that contains all of the AddressBase data merged into a single .csv file.

The order that the documents are referred to in the above text is important, as it states which file is appended to the other. In this instance the headers .csv file comes first, so that the column headers are the first line of the final AddressBase data file and the merged data file is appended to the column headers.

- Save the above Notepad document with the file extension .bat (for example, append.bat) in the same directory as where the column headers and the merged AddressBase data are located (for example, C:\AddressBase_Data).
- Close the .bat file and navigate to the directory where it was saved to (for example, C:\AddressBase_Data). Double-click on the new .bat file (for example, append.bat) and an MS-DOS window will appear. Once the process is complete, the MS-DOS screen will close automatically.
- If the user navigates to the directory where the column headers and the merged AddressBase data are located, it can be noticed that a new .csv file has been created, which is the merged column headers and AddressBase data (for example, AB_Data.csv or AB_Plus_Data.csv).

4.2 AddressBase Premium

There are multiple methods for splitting AddressBase Premium by the record identifiers. The sections below detail two different methodologies which can be employed.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

4.2.1 Gawk

This methodology uses Gawk to append the header files to AddressBase Premium at the same time as splitting the record identifiers.

- Group all the AddressBase Premium CSV files into a folder with no other CSV files contained within.

Please note: this folder must contain no spaces in any of the file directory path, for example, C:\AddressBaseData\AddressBase_Premium

- Into this folder, add the **AddressBase Premium header files**: *Please note: these files need to be extracted from the zip file.*

Record_10_HEADER_Header.csv
Record_11_STREET_Header.csv
Record_15_STREETDESCRIPTOR_Header.csv
Record_21_BLPU_Header.csv
Record_23_XREF_Header.csv
Record_24_LPI_Header.csv
Record_28_DELIVERYPOINTADDRESS_Header.csv
Record_29_METADATA_Header.csv
Record_30_SUCCESSOR_Header.csv
Record_31_ORGANISATION_Header.csv
Record_32_CLASSIFICATION_Header.csv
Record_99_TRAILER_Header.csv

- Go to https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
 - This will download a zip folder called AddressBase_Scripts, extract the contents of this folder to a location of your choice.
 - Next within the folder called Gawk extract the further zip file called gawk-4.0.2-bin.zip.
 - Once this has extracted the file called Gawk.exe place this and the file called AddressBasePremium_GawkSplitScript.bat in the same folder as your data and header files.
- Double click on the AddressBasePremium_GawkSplitScript.bat file and an MS-DOS window will appear. Once the process is complete the screen will close automatically or you will have to press any key to continue.

Please note: that running the .bat file creates temporary files and therefore requires extra space where ever you are creating your files. These files can be much larger than the original CSV files. They are deleted once the process has finished but the space is still required.

- If you look in the directory containing the AddressBase Premium CSV files, header files, gawk.exe file, and batch file (for example, C:\AddressBaseData\AddressBase_Premium), it can now be seen that there are additional files which are similar in their naming convention to the Header files. For example there should now be an ID24_LPI_RECORDS as well as a Record_24_LPI_Header.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

4.2.2 Python

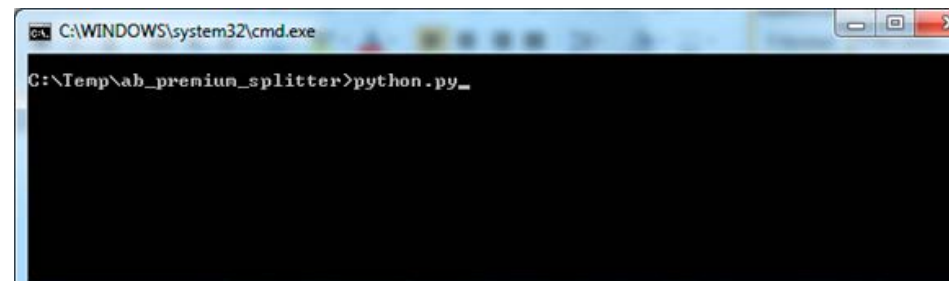
The following instructions detail how to use Python to split AddressBase Premium and append header files. The current Python tools were designed for use with Python 2.7.

Group the AddressBase Premium CSV files into a folder which contains no other files.

Please note: you do not need to download the header files if you are using Python to split your AddressBase Premium data.

Please note: this folder must contain no spaces in any of the file directory path, (for example, C:\AddressBaseData\AddressBase_Premium).

- Go to https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
 - This will download a zip folder called AddressBase_Scripts, extract the contents of this folder to a location of your choice.
 - Within the Code folder there is a file called AddressBasePremium_RecordSplitter.py. Copy this file into the same location as your data.
- Open a command prompt window. Within the command prompt window navigate to the directory that the .py file you just downloaded is saved within.



- Once the command prompt is in the correct file directory, type the name of the .py file into it or select it using the Tab key which will display each file within the file directory in turn. Once selected hit return.
- The following message should be displayed:

‘This program will split OS AddressBase Premium Zip CSV or extracted CSV files by record identifier into new CSV files. Please type in the full path to the directory of OS AddressBase zip files: Directory Path:’

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- Enter the full directory path to where you have stored the AddressBase Premium data. (for example, C:\AddressBaseData\AddressBase_Premium). Hit Return. The process of splitting the files will then begin.

```

C:\WINDOWS\system32\cmd.exe - python.py
C:\Temp\ab_premium_splitter>python.py
This program will split OS AddressBase Premium Zip CSV or extracted CSV files by
record identifier into new CSV files
Please type in the full path to the directory of OS AddressBase zip files:
Directory Path: C:\Temp\ab_premium_splitter_

```

- When complete the following message will be displayed: 'The program will close in 10 seconds'

Please note: You may still need to close the window manually.

```

C:\WINDOWS\system32\cmd.exe
C:\Users\GSanson>cd C:\Temp\ab_premium_splitter
C:\Temp\ab_premium_splitter>python.py
This program will split OS AddressBase Premium Zip CSV or extracted CSV files by
record identifier into new CSV files
Please type in the full path to the directory of OS AddressBase zip files:
Directory Path: C:\Temp\ab_premium_splitter
Program has found 20 OS AddressBase Premium CSV Files
Finished creating empty CSV files with Header line
Program will now split the OS AddressBase Premium files
Processing file number 1 out of 20
Processing file number 2 out of 20
Processing file number 3 out of 20
Processing file number 4 out of 20
Processing file number 5 out of 20
Processing file number 6 out of 20
Processing file number 7 out of 20
Processing file number 8 out of 20
Processing file number 9 out of 20
Processing file number 10 out of 20
Processing file number 11 out of 20
Processing file number 12 out of 20
Processing file number 13 out of 20
Processing file number 14 out of 20
Processing file number 15 out of 20
Processing file number 16 out of 20
Processing file number 17 out of 20
Processing file number 18 out of 20
Processing file number 19 out of 20
Processing file number 20 out of 20
Program has finished splitting the OS AddressBase Premium Files
Finished translating data at Mon, 23 Jun 2014 14:19:54
Elapsed time: 0.6 minutes
Number of Header Records: 20
Number of Street Records: 0
Number of Street Descriptor Records: 0
Number of BLPD Records: 0
Number of XRef Records: 1566
Number of LPI Records: 0
Number of Delivery Point Records: 10
Number of Metadata Records: 20
Number of Successor Records: 0
Number of Organization Records: 0
Number of Classification Records: 52
Number of Trailer Records: 20
The program will close in 10 seconds
C:\Temp\ab_premium_splitter>

```

If you navigate to the directory which contained the .py file and the AddressBase Premium CSV files it can now be seen that there are new files which adhere to the similar naming conventions of the header files. These files contain all of your AddressBase Premium data split out by record type.

5 HOW DO I LOAD THE CSV ADDRESSBASE PRODUCTS INTO A GIS?

AddressBase products can be loaded into several GIS. This chapter describes how to load AddressBase products into commonly used GIS. For more information on other GIS that AddressBase products are compatible with, please speak to your Account Manager.

5.1 Esri®

These instructions have been tested for use with ArcGIS Desktop 9.3 and 10.0.

When using CSV data in ArcGIS, it is necessary to have column headings. The default headings given by ArcGIS are numeric and have no real relevance to AddressBase, hence it is more appropriate to use the headings provided by Ordnance Survey. Instructions on how to merge the appropriate header files and data can be found in Chapter 4.

5.1.1 AddressBase and AddressBase Plus

- Start ArcCatalog as a separate program or within ArcMap if you are using version 10.
- Connect to a folder where the AddressBase data you wish to use can be accessed, for example, C:\AddressBase_Data. To do this:
 - click File or select Folder Connections in version 10.
 - then click Connect Folder, or in version 10 right click on Folder connections and then select connect folder. Then navigate to the relevant folder;
 - select the folder that is to be connected to from the main window; then
 - click OK.
- The folder should now appear in the navigation window to the left of the screen, or within your arc catalog window if you have opened it within ArcGIS Map.
- You now need to create a File Geodatabase to store the address data. Using the file tree, go to folder connections and navigate to the directory where you wish to create the File Geodatabase, for example, C:\AddressBase_Geodatabase\AddressBase_Plus. This may need to be set up as a new connection as per the above.
- Right-click on the folder that you wish to contain the File Geodatabase, and select New and File Geodatabase.
- A File Geodatabase will be created and be named by default 'New File Geodatabase'. Rename the File Geodatabase to a name of your choice.
- Right-click on your new File Geodatabase, and select Import, then Table (single)...
 - For Input Rows, navigate to the location of the CSV file that you wish to open, that is, the file that contains the merged header and AddressBase or AddressBase Plus data file. If you have yet to create the merged file please see Chapter 4.1.
 - The Output Location should automatically populate with the location of the File Geodatabase that is to be updated, this should be the File Geodatabase you created above.
 - Insert a relevant name for the Output Table, for example, AddressBase_data. *Please note: there can be no spaces in the table name.* This name will appear under your geodatabase.
- Click OK.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

To create a map of the locations of the AddressBase records, they need to be geocoded. To do this:

- Right-click on the AddressBase table in the geodatabase that was created in the previous step (This will display as the table name you chose above) and select Create Feature Class.
 - Then, from XY Table...
 - Select the X_Coordinate attribute from the X Field: drop-down menu and the Y_Coordinate attribute from the Y Field: drop-down menu. Leave the Z Field: drop-down menu as <none>.
 - Then click on the Coordinate System of Input Coordinates... button, click Select..., and then navigate to and select the British National Grid – which should be located in the directory Coordinate Systems\Projected Coordinate Systems\National Grids\Europe.
 - Double click on the Coordinate system to select it, then click apply and OK.
 - Click on the open folder button on the right of the text box referring to the Output, navigate to the location where you wish to save the output shapefile or feature class (it is suggested that this be within the geodatabase created above). To do this ensure the 'Save as type' box at the bottom of the dialog box is set to 'File and Personal Geodatabase feature classes' otherwise you will not be able to see the File Geodatabase you created earlier. Give the file a suitable name and click Save.
 - Leave the Configuration keyword: drop-down menu as DEFAULTS, and press OK.
- You may need to right-click on the Personal Geodatabase where it was saved and select Refresh in order to see your points.

Now that all of the processing has been done, the data can be loaded into ArcMap (If you have completed the above work in ArcCatalog and not within ArcMap please follow the steps below):

- Start ArcMap (You may already be in ArcMap if you are using version 10 and choose to use ArcCatalog within ArcMap.
- Select File > Add Data...
- Navigate to the folder where the AddressBase file Geodatabase was created.
- Double-click on the Geodatabase, and select all of the files contained within in one go.
- Click Add.

Please note: the steps above detail how to utilise the X_Coordinate and Y_Coordinate values in the AddressBase product. Latitude and Longitude values are also present and would have to be selected when assigning X and Y fields. (Longitude needs to be inserted into the X field and Latitude into the Y Field). You would also need to select the projection as ETRS89 (EPSG: 4258).

5.1.2 AddressBase Premium

Once the AddressBase Premium data has been split from the single CSV file that it is supplied in, into the CSV files for each of the individual record types, by following the steps outlined in Chapter 4, the files should be loaded into ArcCatalog:

- Start ArcCatalog as a separate program or within ArcMap if using version 10.
- Connect to a folder where the AddressBase data you wish to use can be accessed, for example, C:\AddressBase_Data. To do this:
 - click File or select Folder Connections in version 10.
 - then click Connect Folder, or in version 10 right click on Folder connections and then select connect folder. Then navigate to the relevant folder;
 - select the folder that is to be connected to from the main window; then
 - click OK.
- The folder should now appear in the navigation window to the left of the screen, or within your arc catalog window if you have opened it within ArcGIS Map.
- You now need to create a File Geodatabase to store the address data. Using the file tree, go to folder connections and navigate to the directory where you wish to create the File Geodatabase, for example, C:\AddressBase_Geodatabase\AddressBase_Premium. This may need to be set up as a new connection as per the above.
- Right-click on the folder which you wish to contain the File Geodatabase, and select New and File Geodatabase.
- A File Geodatabase will be created and be named by default 'New File Geodatabase'. Rename the File Geodatabase to a name of your choice.
- Right-click on your new File Geodatabase and select Import, then Table (multiple)...
 - For Input Table, navigate to the location of the .csv files that you wish to open, for example, the folder that contains the AddressBase data split into individual files by record type and select the files that you wish to add. Make sure you add the data files and not the header files; therefore the file name will look like 'ID21_BLPU_Records' not 'Record_21_BLPU_Header'.
 - Click Add.
 - The Output Geodatabase option should automatically be populated by the location of the File Geodatabase that is to be updated, this should be the File Geodatabase you created above.
 - Click OK.
- Once the process is complete, click Close.

Please note depending on the amount of files and data being added the operation may take a while. The window may close before the operation is complete therefore if you cannot see all of your expected files under your geodatabase this may mean the data is still being loaded.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

To create a map of the locations of the AddressBase Premium records, they need to be geocoded. To do this:

- Double-click on the geodatabase that the AddressBase data was just imported into.
- Right-click on the table that was created from AddressBase Premium records with a record type of 21, for example, 'ID21_BLPD_Records', in the geodatabase and select Create Feature Class.
- Then select, From XY Table:
 - Select the X_Coordinate attribute from the X Field: drop-down menu and the Y_Coordinate attribute from the Y Field: drop-down menu. Leave the Z Field: drop-down menu as <none>.
 - Then click on the Coordinate System of Input Coordinates... button, click Select..., and then navigate to and select the British National Grid – which should be located in the directory Coordinate Systems\Projected Coordinate Systems\National Grids\Europe.
 - Double click on the Coordinate system to select it, then click apply and OK.
 - Click on the Open folder button on the right of the text box referring to the Output, navigate to the location where you wish to save the output shapefile or feature class (it is suggested that this be within the geodatabase created above). To do this ensure the 'Save as type' box at the bottom of the dialog box is set to 'File and Personal Geodatabase feature classes' otherwise you will not be able to see the File Geodatabase you created earlier. Give the file a suitable name (for example, XYID21_BLPD_Records).
 - Click Save, leave the Configuration keyword: drop-down menu as Defaults, and click OK.
- So that the new feature class can be seen, right-click on the Personal Geodatabase where it was saved and select Refresh.

Now that all of the processing has been done, the data should be loaded into ArcMap so that the individual tables, split by record type, can be 'related'.

- Start ArcMap (You may already be in ArcMap if you are using version 10 and choose to use ArcCatalog within ArcMap).
- Select File > Add Data...
- Navigate to the folder where the AddressBase Premium file Geodatabase was created.
- Double-click on the Geodatabase, and select all of the files contained within it in one go.
- Click Add.

The way in which all of the individual tables are related/joined can be found within the AddressBase Premium technical specification.

However, for ease of reference, the following joins/relates should be made:

- BLPD (spatial data for record identifier 21) (ID21_BLPD_Records)
 - UPRN – Application Cross Reference (ID23_XREF_Records) UPRN
 - UPRN – LPI (ID24_LPI_Records) UPRN
 - UPRN – Delivery Point Address (ID28_DPA_Records) UPRN
 - UPRN – Successor Record (ID30_Successor_Records) UPRN
 - UPRN – Organisation (ID31_Org_Records) UPRN
 - UPRN – Classification (ID32_Class_Records) UPRN
- LPI (ID24_LPI_Records) USRN – Street (ID11_Street_Records) USRN
- Street (ID11_Street_Records) USRN – Street Descriptor (ID15_StreetDesc_Records) USRN

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

With the Source tab selected in the left-hand navigation window, right-click on the first table you wish to relate to another:

To create the relevant 'relates':

- select Joins and Relates; then
- Relate.
- From the first drop-down, select the attribute from the first table that is going to be used to create the relate between the two tables (relationships stated above).
- From the second drop-down menu, select the table that is going to be related to (relationships stated above).
- From the third drop-down menu, select the attribute from the table that is being related to (relationships stated above).
- In the fourth box, input a relevant name for the relate, for example, BLPU_to_Organisation.
- Click OK.
- Repeat this process for all of the joins/relates.

5.1.3 Helpful tip

Once the data has been loaded into ArcMap, if the user wishes to display more relevant information in the 'Info' tool than the Esri defined Object ID, it is possible to change this:

- double-click on the spatial dataset that you wish to change the Primary Display Field of;
- select the 'Fields' tab; then
- change the Primary Display Field to the desired field, for example, for AddressBase and AddressBase Plus data – UPRN.

5.2 MapInfo®

These instructions are based on the use of MapInfo Professional v12.

When using CSV data in MapInfo, it is not a critical requirement to have column headings; however, for ease of use of the data, it is recommended that the default headings supplied by Ordnance Survey are used in conjunction with the data. Instructions on how to merge the appropriate header files and data can be found in chapter 4.

5.2.1 AddressBase and AddressBase Plus

- Start MapInfo.
- Cancel the Quick Start prompt.
- Click File, then Open..., and navigate to the folder that contains the AddressBase data combined with the appropriate header file created in chapter 4.
- In the Files of Type drop down menu, select Comma delimited CSV (*.csv), and select the merged AddressBase data and header file to be loaded. Click Open.
- On the next window tick the box which states 'Use First Line for Column Titles, and select the character set of INSERT CHARACTER SET and then select OK.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

5.2.2 Format attributes

When adding data this way, the field type classifications and field sizes of each column are done automatically – to fit the type of data that MapInfo believes is contained within the column and the largest value of that classification found within that column. The classifications and field sizes of some attributes may not match the field types and sizes stated in the AddressBase technical specification. These should be changed so that they match the values stated. It is only possible to change the classification types and values in an editable copy of a table – as the initial MapInfo table created simply references the CSV file that was opened and it is not possible to edit the classification of an attribute. Hence, a copy will have to be created so that the edits can be made.

- Go to File, Save Copy As..., select the AddressBase table that was loaded in, Save As..., name the table to be created, then click Save.
- Open the table that was just created. File, Open..., navigate to and select the copy of <copy_of_AddressBase>, click Open.

Once the copy has been saved and opened, to check and change any attribute classifications that do not match those stated in the AddressBase technical specification, navigate to: Table > Maintenance > Table Structure... then select the table to be edited and click OK.

On this screen, it is possible to change the Type and width of each attribute to match that stated in the AddressBase technical specification. This should be adhered to for all attributes apart from the UPRN, which should be classified as Float, and all attributes that have a Field Type of 'Date' in the AddressBase technical specification, which should be classified as Character with a length of 10. These discrepancies are due to software-specific issues in handling the data. After all changes have been made, click OK.

5.2.3 Geocoding

In order to create a map of the location of the AddressBase records, they need to be geocoded. To do this, ensure that the table of AddressBase records that you wish to geocode is open, and then:

- Navigate to 'Table', Create Points...
- Select:
 - The X_Coordinate attribute from the Get X Coordinates from Column: drop-down menu.
 - The Y_Coordinate attribute from the Get Y Coordinates from Column: drop-down menu.
- Then click on the Projection... button:
 - Select the British Coordinate Systems option from the Category drop-down menu and then the British National Grid [EPSG: 27700].
 - Click OK to close that screen, and once again click OK to close the next screen.
- To view the geocoded points, go to Window, New Map Window.

Please note: the steps above detail how to utilise the X_Coordinate and Y_Coordinate values in the AddressBase product. Latitude and Longitude values are also present and would have to be selected when assigning X and Y fields. (Longitude needs to be inserted into the X field and Latitude into the Y Field). You would also need to select the projection as ETRS89 (EPSG: 4258).

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

5.2.4 General considerations

MapInfo has a size limit of 2 Gb on each table. This equates to a maximum number of approximately 4 million AddressBase records.

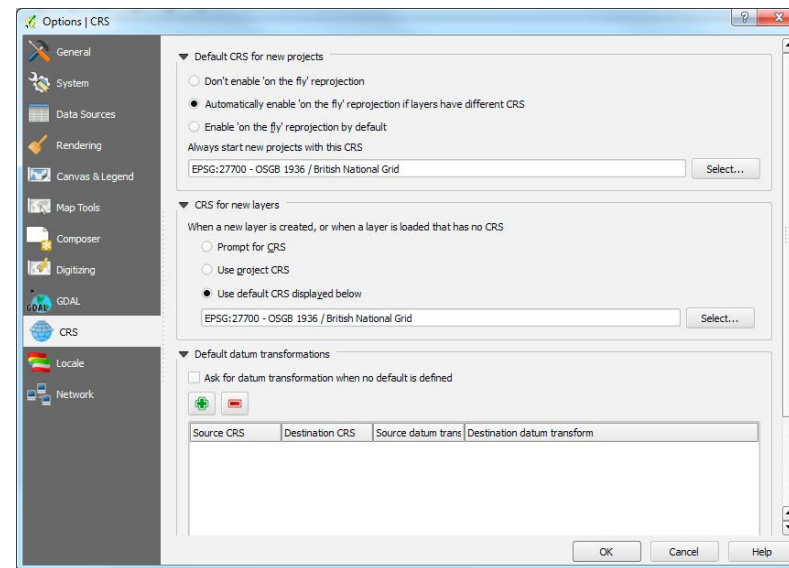
5.3 QGIS

This method has been tested with release 2.6 of QGIS, the process will either be the same or very similar in other releases but this document cannot guarantee that all selections will be the same.

5.3.1 Setting the Projection

Firstly you need to check the coordinate reference system is set-up correctly to import AddressBase data. Click Settings and then go to Options...

Select CRS from the left hand menu:



- Ensure that the default CRS used is set to British National Grid. This is required under both the 'Default CRS for new projects' section and the 'CRS for new layers' section – as above. If you are wanting to use the Latitude and Longitude columns in product set the CRS to ETRS89 (EPSG: 4258).
- If either of these are not set to British National Grid:
 - Click Select...
 - In the Filter box at the top type '27700' and select British National Grid.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

5.3.2 AddressBase and AddressBase Plus

- Go to Layer, and Select 'Add Delimited Text Layer...'
- Click Browse next to the File name and locate the CSV file that was created in Chapter 4 – containing the merged header files and AddressBase data.
- Select the CSV file, and click Open.
- Accept the default or create a new layer name for the dataset.
- Ensure the 'First record has field names' is ticked.
- Alongside 'Field Options' choose Decimal separator is comma only.
- Also alongside Geometry Definition ensure 'Point Co-ordinates' is selected.
- You should now be able to select the X_Coordinate field for the 'X Field' drop down and Y_Coordinate for the 'Y Field' drop down, if this was not done automatically. If you are using the Latitude and Longitude columns, the Longitude column needs to be inserted into X_COORDINATE field, and Latitude column needs to be inserted into Y_COORDINATE.
- Click OK.

5.3.3 AddressBase Premium

- As AddressBase Premium is made up of many record types Joins need to be made within QGIS in order for you to view all the data available in your data supply.
- The Joins you need to make are highlighted in our technical documents but for reference:

BLPU (spatial data for record identifier 21) (ID21_BLPV_Records):

- UPRN – Application Cross Reference (ID23_XREF_Records) UPRN
- UPRN – LPI (ID24_LPI_Records) UPRN
- UPRN – Delivery Point Address (ID28_DPA_Records) UPRN
- UPRN – Successor Record (ID30_Successor_Records) UPRN
- UPRN – Organisation (ID31_Org_Records) UPRN
- UPRN – Classification (ID32_Class_Records) UPRN

LPI (ID24_LPI_Records)

- USRN – Street (ID11_Street_Records) USRN

Street (ID11_Street_Records)

- USRN – Street Descriptor (ID15_StreetDesc_Records) USRN

Please note: (The following explains how the links are made between the BLPU (ID21_BLPV_Records) and the Application Cross Reference (ID23_XREF_Records). The process needs to be repeated for any subsequent additions you wish to make; based on the joins suggested above.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- Go to Layer, and Select 'Add Delimited Text Layer...'
- Click Browse next to the File name and locate the CSV file that was created in Chapter 4 – named (ID21_BLPUs_Records) not the files named with 'Record' at the start.
- Select the CSV file, and click Open.
- Accept the default or create a new layer name for the dataset.
- Ensure the 'First record has field names' is ticked.
- Alongside 'Field Options' choose Decimal separator is comma only.
- Also alongside Geometry Definition ensure 'Point Co-ordinates' is selected.
- You should now be able to select the X_Coordinate field for the 'X Field' drop down and Y_Coordinate for the 'Y Field' drop down, if this was not done automatically.
- Click OK.

Please note: The above would have loaded the BLPUs record information, you now need to make the correct joins to retrieve the extra information. The process below highlights how you make the join between the BLPUs record and the Application Cross Reference records.

- Go to Layer, and Select 'Add Delimited Text Layer...'
- Click Browse next to the File name and locate the CSV file that was created in Chapter 4 – named (ID23_XREF_Records) not the files named with 'Record' at the start.
- Accept the default or create a new layer name for the dataset.
- Ensure the 'First record has field names' is ticked.
- Alongside 'Field Options' choose Decimal separator is comma only.
- Alongside 'Geometry definition' choose No Geometry (attribute only table)
- Click OK.
- This table will now be added to QGIS but will not be viewable as we have added it as an attribute table only.
- Next right click on your BLPUs layer and select Properties.
- Go to the Joins tab found on the left hand side.
- Click the Green plus button in the bottom left hand corner.
- Select your join layer (for this example: Application Cross reference (ID23_XREF_RECORDS))
- Select the join field – for all BLPUs links this will be the UPRN (see join information above).
- The target field will also be the UPRN for this example.
- Click OK – you should now have a join listed in your Joins window.
- Click OK to return back to your main mapping screen.
- If you now select one of your BLPUs records in the main mapping window you will see the BLPUs attributes and also the relevant Application Cross References for the record you have selected.
- You can now repeat these steps for the additional joins you wish to make.

6 IMPORTING ADDRESSBASE PRODUCTS INTO A DATABASE

AddressBase products can be loaded into several types of database. This chapter describes how to load AddressBase products into commonly used ones. For more information on other databases that AddressBase products are compatible with, please speak to your Account Manager.

It should be noted that ArcMap, ArcGIS Desktop and ArcGIS Server software do not support the BIGINT/NUMBER data type as an object id. The use of the BIGINT/NUMBER data type should therefore be considered if the expectation is to use the data 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.

Please note: if you are loading AddressBase 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 as per our specification there is a chance the load may fail. It is therefore suggested this is considered upon your loading process.

6.1 Important Information

Please note that primary keys on all tables for example (UPRN on the BLPU table) are valid upon a data load. If a delete is issued for a Primary key this does not mean this Primary Key will not reappear in subsequent supplies.

There are a number of reasons for this:

- The record has moved in location more than once, moving it out of your area of interest (therefore the record is deleted) but then back into your area of interest in the future. This would also occur if you alter your area of interest.
- 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.

It is important to note if a UPRN is deleted and then reinserted this does not compromise the integrity of the UPRN. The UPRN will not have been reallocated to a different property and therefore remains the unique identifier for a property.

6.2 Microsoft® Access

The method below has been designed for use with Microsoft Access 2013 although the data can be imported into older versions.

6.2.1 AddressBase and AddressBase Plus

It is possible to import AddressBase and AddressBase Plus data directly into Microsoft Access. You must first create a Microsoft Access Database by:

- Selecting Blank desktop database, and then inputting an appropriate name and choosing a location to save the database.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

After creating the database, you need to import your data.

To import the AddressBase data:

- Go to the External Data ribbon
- Then within the 'Import & Link' section select 'Text File'
- Locate the CSV file that contains the data and headers in one file as per Chapter 4, and click open.
- Ensure the 'Import the source data into a new table in the current database' option is selected and then click 'OK'.
- On the next screen ensure the 'Delimited' option is selected and click Next.
- On the next screen, select Comma as the delimiter that separates fields and tick the box which states 'First Row contains Field Names'. Also select " as the text qualifier.
- Next select Advanced in the bottom left hand corner.
- Change the Date Order option to 'YMD'.
- Tick the Four Digit Years box.
- Change the Date Delimited to be '-'
- Tick the leading zeros in date box. Then click OK.
- Ensure the Text Qualifier is set to a double quote.
- Click Next in the wizard window, and the next screen will ask you to do more work regarding the table set up.
- You now need to work through each field and ensure the Data Type matches what is defined in the technical specification for the product you are loading.

Please note: the only variations compared to the Technical Specification should be the UPRN and this should be set to Long Text and not Integer. Also if the Technical Specification states 'Float' as a datatype this is achieved by inserting a data type of 'Double' in Access.

Click Next once you have been through all the fields.

- Give your new table a name or leave the default name and click Finish.

6.2.2 AddressBase Premium

Select Blank desktop database, then input an appropriate name and choose a location to save the database.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

After creating the database, to import the AddressBase Premium data:

- Go to the External Data ribbon
- Then within the 'Import & Link' section select 'Text File'
- Locate the AddressBase Premium CSV files that contain the data split by record type and containing headers, to create these files please see Chapter 4. An example file name would be ID21_BLPD_Records.
- On the next screen ensure the 'Delimited' option is selected and click Next.
- On the next screen, select Comma as the delimiter that separates fields and tick the box which states 'First Row contains Field Names'. Also select " as the text qualifier.
- Next select Advanced in the bottom left hand corner.
- Change the Date Order option to 'YMD'.
- Tick the Four Digit Years box.
- Change the Date Delimited to be '-'
- Tick the leading zeros in date box. Then click OK.
- Ensure the Text Qualifier is set to a double quote
- You now need to work through each field and ensure the Data Type matches what is defined in the technical specification for the product you are loading.

Please note: the only variations compared to the Technical Specification should be the PRO_ORDER, UPRN and PARENT_UPRN and these should be set to Long Text and not Integer. Also if the Technical Specification states 'Float' as a datatype this is achieved by inserting a data type of 'Double' in Access.

Click Next once you have been through all the fields.

- On the next screen select 'Choose my own primary key' and choose the appropriate primary key dependent on the record type you are importing. The appropriate primary keys can be found in our technical documentation.
- Give your new table a name or leave the default name and click Finish.

This process should be repeated for all AddressBase Premium datasets, split by record type – importing them all into the same Access Database. Please note the changes to the date format also need to be made for each import.

Please note: when bringing in the additional tables if the tables you are importing contain any of the following columns they should be given a Data Type of Long Text rather than the type quoted in the Technical Specification – PRO_ORDER, UPRN, PARENT_UPRN, SUCCESSOR, CUSTODIAN_UPRN, RECORD_COUNT

Once all the tables have been inserted they can be linked using queries.

- To do this navigate to the 'Create' ribbon and select 'Query Design' from within Queries.
- Within the 'Show Table' pop up box select all of the database tables which you have imported by selecting the top record holding shift and then selecting the bottom record.
- Then click Add, this should add the tables to the query window and therefore the 'Show Table' window can be closed.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Hint – Make the query window as big as possible at this stage so you can make the joins graphically as easy as possible as this is easier.

- To create the joins graphically select the attribute to be joined from in the first table by left clicking and without letting go of the mouse button, drag it to the matching attribute in the table to be matched to. A line will then appear between the two tables showing a join has been made.

Please note you can right click on the join and select Join Properties. This allows you to specify the join type.

- The following joins should be made between the tables if required –
- BLPU (ID21_BLPV_Records)
 - UPRN – Application Cross Reference (ID_23_XREF_Records) UPRN
 - UPRN – LPI (ID24_LPI_Records)) UPRN
 - UPRN – Delivery Point Address (ID28_DPA_Records) UPRN
 - UPRN – Successor Record (ID30_Successor_Records) UPRN
 - UPRN – Organisation (ID31_Org_Records) UPRN
 - UPRN – Classification (ID32_Class_Records) UPRN
- LPI (ID24_LPI_Records) USRN – Street (ID11_Street_Records) USRN
- Street (ID11_Street_Records) USRN – Street Descriptor (ID15_StreetDesc_Records) USRN

6.2.3 General considerations

It should be noted that Microsoft Access has a limited file size for tables stored within its databases and this varies dependent on the version you are using. In 2003, 2007 and 2010 the maximum table size is 2 Gb and this approximately equates to six million AddressBase records. In the 1997 version the table limit is 1 Gb which equates to approximately three million records.

6.3 PostgreSQL

These notes outline how to load AddressBase Premium into a PostgreSQL database using the text files created using the CSV file merge utility described in Chapter 4. They have been prepared using version 1.12.3 of PostgreSQL and with an assumption that you have set-up your database with the PostGIS spatial extension. The instructions only cover loading AddressBase Premium.

It is recommended that you have an understanding of database terminology before attempting to follow this guide.

6.3.1 Loading instructions

To Load AddressBase Premium use the following steps:

- 1 Prepare the text files as described in chapter 4 of this guide.
- 2 Check that there are no carriage returns at the end of each .csv output file as this will result in errors being caused. To check this you can open the csv files and click 'End' on your keyboard. Your cursor should now be at the end of the last line, and not on the line below. If it is on the line below, remove the extra carriage return.
- 3 Open PGAdmin tool (this can be found on the Windows Start Menu – PostgreSQL).
- 4 Either connect to an existing database or create a new database (it is recommended that the encoding is set to UTF-8).
- 5 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 https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
 - This will download a zip folder called AddressBase_Scripts, extract the contents of this folder to a location of your choice.
 - Within this extract there is a folder called PostgreSQL, there are three folders within this with examples for each of the AddressBase products. But for this example (AddressBase Premium) open the AddressBase Premium folder and save the file called PostgreSQL_AddressBase_Premium_CreateTable.sql to a location of your choice.
 - This sql file can be opened in a text editor, and the SQL scripts within copied and pasted into the SQL query tool within PostgreSQL.
 - The following tables should be created (please note you can alter table names as you wish):
 - BLPU
 - Classification
 - Cross reference
 - Delivery Point Address
 - LPI
 - Organisation
 - Streets
 - Street Descriptor
 - Successor Records
- 6 Once the tables have 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.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Please note: that the path and file name may need to be changed to reflect your data.

```
COPY abp_blp FROM 'C:/Address/ID21_BLP_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_delivery_point FROM 'C:/Address/ID28_DPA_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_lpi FROM 'C:/Address/ID24_LPI_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_crossref FROM 'C:/Address/ID23_XREF_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_classification FROM 'C:/Address/ID32_Class_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_street FROM 'C:/Address/ID11_Street_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_street_descriptor FROM 'C:/Address/ID15_StreetDesc_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_organisation FROM 'C:/Address/ID31_Org_Records.csv' DELIMITER ';' CSV HEADER;
COPY abp_successor FROM 'C:/Address/ID30_Successor_Records.csv' DELIMITER ';' CSV HEADER;
```

- 7 Once loaded you may want to add primary and foreign 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. For the BLP table, the UPRN provides a unique value and USRN in the Streets table. Primary Keys are added using the following steps:
 - a Right-click on the table name and select New Object – New Primary Key
 - b Enter a Name to call the key and select the Columns tab
 - c From the drop-down at the foot of the window select UPRN
 - d Click on Add
 - e Click OK

Repeat the procedure for the Streets table and USRN.

- 8 However, in the other tables these columns may contain duplicate values. In this case use the table key, for example, LPI_Key as the primary identifier. Alternative object identifiers (OID) can be added to each table (these are also required to use the data in some GIS including QGIS and MapInfo. The following SQL can be used for this:

```
ALTER TABLE insert_table_name SET WITH OIDS
```

- 9 To help performance when querying across multiple tables a foreign key may be added, however, as with a primary key only unique data columns can be used.
 - a Click on the table you wish to add the key to in pgAdmin
 - b Click on the + sign
 - c Right-click on Constraints and select New Object > New Foreign Key
 - d Under the Properties Tab select the table to join to from the References drop down
 - e On the same tab enter a name for the key (for example, FKey1)
 - f Click on Columns tab
 - g Click on the unique field for Local field and the same field from the Referencing drop-down
 - h Click on Add and OK
 - i Click OK

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10 You will need to repeat this for each table that contain suitable fields.

11 You can also index the data by following these steps.

- Click on the table in pgAdmin
- Click on the + sign
- Right-click on Indexes > New Index
- On the Properties enter a name (for example, Idx1)
- Click on the Columns tab
- Select Column (for example, UPRN or USRN)
- Click Add and then OK

6.3.2 Converting coordinates to geometry

Please note: the AddressBase Premium product contains both British National Grid (BNG) and ETRS89 coordinates. The text below shows how to create a column for BNG but can be altered to utilise the ETRS89 data.

First and foremost add a geometry column to make the data usable in a GIS
 SELECT AddGeometryColumn ('public', 'abp_blpu', 'geom', 27700, 'POINT', 2);

Next load the data into your new geometry column using the following SQL – UPDATE public.abp_blpu SET geom = ST_GeomFromText('POINT(' || x_coordinate || ' ' || y_coordinate || ')', 27700).

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

Finally create a spatial index on the data using – CREATE INDEX idx_blpu_geom ON public.abp_blpu USING gist(geom)

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

Note: A PostGIS extension is required to create geometries.

6.4 Loading AddressBase products into Oracle

The following set of instructions assumes a basic knowledge of Oracle databases and SQLLDR which is the package used to load the CSV files into the database. Other options are available for loading data into Oracle databases.

Using SQLLDR is not necessary to merge all the AddressBase files into a single file, but it can load the data directly from the provided file as long as it has been unzipped first. The following steps describe one method for loading a full supply of the data. Sections in *Italics* denote where changes will need to be made to accommodate local file naming.

6.4.1 AddressBase CSV

- 1 Copy the data files from the disk to an appropriate location. It is worth noting that the files will need to be unzipped and therefore you will need in the region of 5 Gb of free space.
- 2 Once the data is copied the next stage is to uncompress the *.zip files to *.csv. This can be done using a package such as Winzip, or 7Zip. Please see Chapter 3.3 for more information.
- 3 Now that all the files are uncompressed it will make the latter stages quicker and easier to create a file list of all the CSV files to be loaded. This can be done using a batch file that writes all the files out to a text file:

```
dir *.csv /b/s >filelisting.txt
pause
```

This file will form the basis for loading the control file in a later step.

- 4 Go to https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
This will download a zip folder called AddressBase_Scripts, extract the contents of this folder to a location of your choice.
 - Inside this zipped file there is a folder called Oracle. Inside this folder there is a folder for each of the AddressBase products, for this example open the AddressBase folder.
 - There are three files in this folder, open the file ending createtable.sql in a text editor.
 - Copy and paste this SQL into oracle in order to create the tables required.
Please note: within the provided SQL there are references to <TablesapceName> this needs to be changed to the tablespace that is being worked in.
- 5 Next a SQLLDR control file needs to be created. An example of one of these files can be found in the same location as the create table scripts referenced in the step above –
https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
Within the Oracle folder and then AddressBase.

Within the file you will see lines referencing 'INFILE'

Populate these INFILE lines with the file listing created in the previous steps, with one INFLE command for each file. This tells the process to open each of the files and carry out the other tasks listed below it.

The last section of the control file creates the Geometry for the X and Y coordinate (British National Grid) if you want to create a Geometry for the Latitude and Longitude values this will need to be created separately.

Once this file is created it can be called from a .bat file to run it on the box that holds the database rather than a remote machine. If you wish to run it from a remote machine contact your Oracle Administrator who will be able to advise on the best way to do this within your environment. The contents of the .bat file should be similar to:

```
@sqlldr <username>/<password>@<service name> control= <name of ctl file created previously>
Pause
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- 6 Once the load has completed the relevant indexes need to be built. The SQL statements to create the indexes can be found in the same location as the Oracle create table SQL statements and the SQLLDR control example.

https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip

Within the Oracle folder.

Again you can copy and paste the SQL statements from a text editor into oracle in order to create the indexes.

Please note: the table name provided may be different to yours, and therefore might need changing before use.

6.4.2 AddressBase Plus CSV

The process for loading AddressBase Plus is the same as for AddressBase, in that the data gets copied to a drive, unzipped, and a file list created. The tables are then created, the control file generated, and the data loaded. Finally the indexes are built.

- 1 Copy the data from a disk to an appropriate drive. For AddressBase Plus uncompressed will occupy in the region of 13 Gb of disk space.
- 2 Once the data is copied the next stage is to uncompress the *.zip files to *.csv. This can be done using a package such as Winzip, or 7Zip. Please see Chapter 3.3 for more information.
- 3 Now that all the files are uncompressed it will make the latter stages quicker and easier to create a file list of all the CSV files to be loaded. This can be done using a batch file that writes all the files out to a text file:

```
dir *.csv /b/s >filelisting.txt
pause
```

This file will form the basis for loading the control file in a later step.

- 4 Go to https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip

- This will download a zip folder called AddressBase_Scripts, extract the contents of this folder to a location of your choice.
- Inside this zipped file there is a folder called Oracle. Inside this folder there is a folder for each of the AddressBase products, for this example open the AddressBase Plus folder.
- There are three files in this folder, open the file ending createtable.sql in a text editor.
- Copy and paste this SQL into oracle in order to create the tables required.

Please note: within the provided SQL there are references to <TablespaceName> this needs to be changed to the tablespace that is being worked in.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- Next a SQLLDR control file needs to be created. An example of one of these files can be found in the same location as the create table scripts referenced in the step above
https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
Within the Oracle folder and then AddressBase Plus.

Within the file you will see lines referencing 'INFILE'

Populate these INFILE lines with the file listing created in the previous steps, with one INFLE command for each file. This tells the process to open each of the files and carry out the other tasks listed below it.

The last section of the control file creates the Geometry for the X and Y coordinate (British National Grid) if you want to create a Geometry for the Latitude and Longitude values this will need to be created separately.

Once this file is created it can be called from a .bat file to run it on the box that holds the database rather than a remote machine. If you wish to run it from a remote machine contact your Oracle Administrator who will be able to advise on the best way to do this within your environment. The contents of the .bat file should be similar to:

```
@sqlldr <username>/<password>@<service name> control= <name of ctl file created previously>
Pause
```

- Once the load has completed the relevant indexes need to be built. The SQL statements to create the indexes can be found in the same location as the Oracle create table SQL statements and the SQLLDR control example.
https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
Within the Oracle folder.

Again you can copy and paste the SQL statements from a text editor into oracle in order to create the indexes.

Please note the table name provided may be different to yours, and therefore might need changing before use.

6.4.3 AddressBase Premium CSV

The process for loading AddressBase Premium is the same as for AddressBase, in that the data gets copied to a drive, unzipped, and a file list created. The tables are then created, the control file generated, and the data loaded. Finally the indexes are built.

- Copy the data files from the disk to an appropriate location. It is worth noting that the files will need to be unzipped and therefore you will need in the region of 30 Gb of free space.
- Once the data is copied the next stage is to uncompress the *.zip files to *.csv. This can be done using a package such as Winzip, or 7Zip. Please see Chapter 3.3 for more information.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- Now that all the files are uncompressed it will make the latter stages quicker and easier to create a file list of all the CSV files to be loaded. This can be done using a batch file that writes all the files out to a text file:

```
dir *.csv /b/s >filelisting.txt
pause
```

This file will form the basis for loading the control file in a later step.

- To load the data there needs to be a table, or in the case of Premium data a number of tables created to hold the data. To download some SQL statements to create these tables please go to https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip This will download a zip folder called AddressBase_Scripts, extract the contents of this folder to a location of your choice. Inside this zipped file there is a folder called Oracle. Inside this folder there is a folder for each of the AddressBase products, for this example open the AddressBase Premium folder. There are three files in this folder, open the file ending createtable.sql in a text editor. Copy and paste this SQL into oracle in order to create the tables required.

Please note: within the provided SQL there are references to <TablespaceName> this needs to be changed to the tablespace that is being worked in.

- Now that the tables have been created the next stage is to create the SQLLDR control file. This is the file that describes where SQLLDR can find the relevant files, the structure it will find in those files, and what it needs to do with the records that are within the data.

An example of one of these files can be found in the same location as the create table scripts referenced in the step above https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip Within the Oracle folder and then AddressBase Premium.

Populate the INFILE lines with the file listing that was created in step 3, with one INFILE command for each file. This tells the process to open each of the files and carry out the other tasks listed below it.

The rest of the file tells the tool how to interpret the files that it is reading in. The INTO statement at the top of each of the tables tests the first column (01) of the row in the file that it is looking at, and if it meets the criteria the structure of the table that the line is to be loaded into is described below it. Save the completed file with the extension *.ctl.

Once this file is created it can be called from a .bat file to run it on the box that holds the database rather than a remote machine. If you wish to run it from a remote machine contact your Oracle Administrator who will be able to advise on the best way to do this within your environment. The contents of the .bat file should be similar to:

```
@sqlldr <username>/<password>@<service name> control= <name of ctl file created previously>
Pause
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

When the .bat file is run the data is loaded. Any records that do not meet the expected structure, or errors with the load, are recorded in the *.bad, and *.log files respectively that are written out to the same drive location as the control file that is being used to load the data. It is strongly recommended that the log file is checked once the load is completed to check that all of the data has loaded correctly before continuing.

- Post load, the indexes need to be built in order to be able to carry out spatial queries and other queries where the relationship between the tables need to be built within the query. For example, in order to return all the Delivery Point Addresses within a county, there needs to be a spatial index on the BLP table which contains the geometry, as well as the UPRN in both the BLP and Delivery Point Address table. The SQL statements to create the indexes can be found in the same location as the Oracle create table SQL statements and the SQLldr control example.
https://s3-eu-west-1.amazonaws.com/osproducts/AddressBase/AddressBase_Scripts.zip
 Within the Oracle folder and then AddressBase Premium.

Again you can copy and paste the SQL statements from a text editor into oracle in order to create the indexes.

Please note: the table name provided may be different to yours, and therefore might need changing before use.

Once the indexes are complete the data loading process is complete and the data is ready to use.

6.5 Loading AddressBase products in Microsoft SQL Server

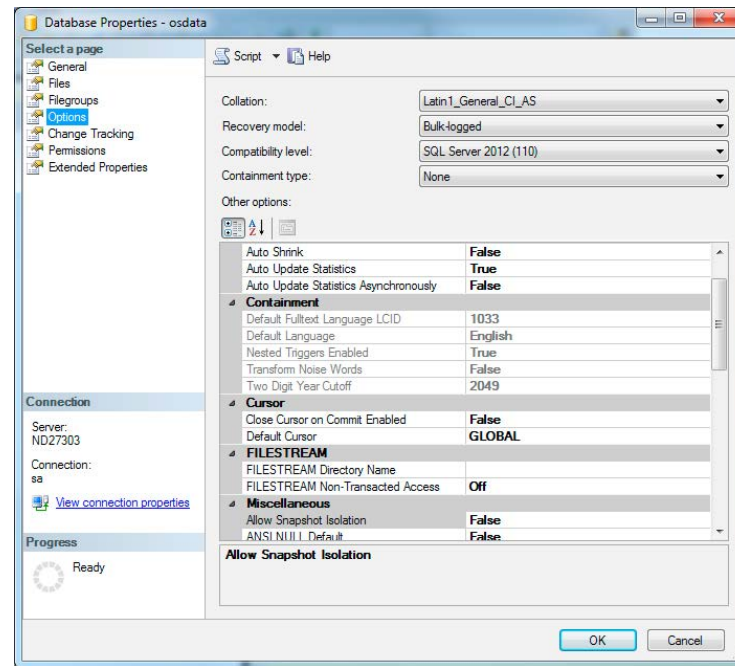
The following assumes a basic knowledge of Microsoft SQL Server and is not meant to be interpreted as the only way to load AddressBase data into Microsoft SQL Server but provide guidance for anyone wanting to use this guide.

6.5.1 AddressBase Premium CSV

Before Loading

- There is an important step to run before beginning the load. The default logging for Microsoft SQL Server can cause logfiles to grow over 20GB in size, causing the data not to load.
- Therefore before loading large amounts of data into a SQL Server database, you can change the logging carried out to BULK-LOGGED. This means the minimal amount possible is logged reducing the logfiles size. This can be set by going into the SQL Server Management Studio and right clicking on the database you are loading into and selecting properties.
- After selecting the Options section, on the left-hand side, choose the dropdown box for Recovery Model and choose BULK-LOGGED.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89



Before you load the AddressBase Premium CSV data please ensure it has been managed as per Section 4.2. This will leave you with a CSV file for each AddressBase Premium table beginning with 'ID' followed by the record identifier and table names.

Loading the CSV files

1. Open up the SQL Server Management Studio (SSMS), if not already open, and right-click your database from the left hand panel.
2. Navigate to Tasks, and then click Import Data. This will open up the SQL Server Import and Export Wizard.
3. Click Next.
4. On the next screen you will need to select your Data Source. The Data Source needs to be changed to Flat File Source.
5. Use the Browse button to select your CSV file. Each table (ID21_BLPD_Records for example), need to be added separately.
Please note: if you cannot see your files ensure the bottom right drop down box has CSV files (.csv) selected.*
6. Click Open.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

7. Your CSV file should have a header row as per the notes above. This means you need to ensure the 'Column names in the first data row' is ticked.

8. Also make sure 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 the data remains intact.

9. On the left hand side of this screen select Columns, and make sure that the Column delimiter is set to Comma.

10. Then click Advanced, again from the left hand side.

For each column of data you are loading, you will need to specify a DataType.

The Microsoft SQL Server loader defaults to 'String'. The data types for each Table and Column are as follows:

- BLPU (ID21_BLPUR_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - LOGICAL_STATUS – Numeric
 - BLPU_STATE – Numeric – You also need to make this non-nullable (see points below)
 - BLPU_STATE_DATE – Date
 - PARENT_UPRN – Numeric
 - X_COORDINATE – Double-Precision Float
 - Y_COORDINATE – Double-Precision Float
 - LATITUDE – Double-Precision Float
 - LONGITUDE – Double-Precision Float
 - RPC – Numeric
 - LOCAL_CUSTODIAN_CODE – Numeric
 - START_DATE – Date
 - END_DATE – Date
 - LAST_UPDATE_DATE – Date
 - ENTRY_DATE – Date
 - ADDRESSBASE_POSTAL – String
 - POSTCODE_LOCATOR – String
 - MULTI_OCC_COUNT – Numeric
- Classification (ID32_Class_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - CLASS_KEY – String
 - CLASSIFICATION_CODE – String
 - CLASS_SCHEME – String

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- SCHEME_VERSION – Double-Precision Float
- START_DATE – Date
- END_DATE – Date
- LAST_UPDATE_DATE – Date
- ENTRY_DATE – Date
- XREF (ID23_XREF_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - XREF_KEY – String
 - CROSS_REFERENCE – String
 - VERSION – Numeric
 - SOURCE – String
 - START_DATE – Date
 - ND_DATE – Date
 - LAST_UPDATE_DATE – Date
 - ENTRY_DATE – Date
- DPA (ID28_DPA_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - UDPRN – Numeric
 - ORGANISATION_NAME – String – but change the column length to 250
 - DEPARTMENT_NAME – String – but change the column length to 250
 - SUB_BUILDING_NAME – String – but change the column length to 250
 - BUILDING_NAME – String – but change the column length to 250
 - BUILDING_NUMBER – Numeric
 - DEPENDENT_THOROUGHFARE – String – but change the column length to 250
 - THOROUGHFARE – String – but change the column length to 250
 - DOUBLE_DEPENDENT_LOCALITY – String
 - DEPENDENT_LOCALITY – String
 - POST_TOWN – String
 - POSTCODE – String
 - POSTCODE_TYPE – String
 - WELSH_DEPENDENT_THOROUGHFARE – String – but change the column length to 250
 - WELSH_THOROUGHFARE – String – but change the column length to 250
 - WELSH_DOUBLE_DEPENDENT_LOCALITY – String
 - WELSH_DEPENDENT_LOCALITY – String
 - WELSH_POST_TOWN – String
 - PO_BOX_NUMBER – String

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- PROCESS_DATE- Date
- START_DATE – Date
- END_DATE – Date
- LAST_UPDATE_DATE – Date
- ENTRY_DATE – Date
- LPI (ID24_LPI_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - LPI_KEY – String – You also need to make this non-nullable (see points below)
 - LANGUAGE – String
 - LOGICAL_STATUS – Numeric
 - START_DATE – Date
 - END_DATE – Date
 - LAST_UPDATE_DATE – Date
 - ENTRY_DATE – Date
 - SAO_START_NUMBER – Numeric
 - SAO_START_SUFFIX – String
 - SAO_END_NUMBER – Numeric
 - SAO_END_SUFFIX – String
 - SAO_TEXT – String – but change the column length to 250
 - PAO_START_NUMBER – Numeric
 - PAO_START_SUFFIX – String
 - PAO_END_NUMBER – Numeric
 - PAO_END_SUFFIX – String
 - PAO_TEXT – String – but change the column length to 250
 - USRN – Numeric
 - USRN_MATCH_INDICATOR – String
 - AREA_NAME – String
 - LEVEL – String
 - OFFICIAL_FLAG – String
- Organisation (ID31_Org_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - ORG_KEY – String
 - ORGANISATION – String – but change the column length to 250
 - LEGAL_NAME – String – but change the column length to 250
 - START_DATE – Date
 - END_DATE – Date

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- LAST_UPDATE_DATE – Date
- ENTRY_DATE – Date
- Street (ID11_Street_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - USRN – Numeric (Not Null, see below)
 - RECORD_TYPE – Numeric
 - SWA_ORG_REF_NAMING – Numeric
 - STATE – Numeric
 - STATE_DATE – Date
 - STREET_SURFACE – Numeric
 - STREET_CLASSIFICATION – Numeric
 - VERSION – Numeric
 - STREET_START_DATE – Date
 - STREET_END_DATE – Date
 - LAST_UPDATE_DATE – Date
 - RECORD_ENTRY_DATE – Date
 - STREET_START_X – Double-Precision Float
 - STREET_START_Y – Double-Precision Float
 - STREET_START_LAT – Double-Precision Float
 - STREET_START_LONG – Double-Precision Float
 - STREET_END_X – Double-Precision Float
 - STREET_END_Y – Double-Precision Float
 - STREET_END_LAT – Double-Precision Float
 - STREET_END_LONG – Double-Precision Float
 - STREET_TOLERANCE – Numeric
- Street Descriptor (ID15_StreetDesc_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - USRN – Numeric
 - STREET_DESCRIPTION – String – but change the column length to 250
 - LOCALITY_NAME – String
 - TOWN_NAME – String
 - ADMINISTRATIVE_AREA – String
 - LANGUAGE – String
 - START_DATE – Date
 - END_DATE – Date
 - LAST_UPDATE_DATE – Date
 - ENTRY_DATE – Date

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- Successor (ID30_Successor_Records)
 - RECORD_IDENTIFIER – Numeric
 - CHANGE_TYPE – String
 - PRO_ORDER – Numeric
 - UPRN – Numeric
 - SUCC_KEY – String
 - START_DATE – Date
 - END_DATE – Date
 - LAST_UPDATE_DATE – Date
 - ENTRY_DATE – Date
 - SUCCESSOR – Numeric

11. Once you have set up the column types, you then need to click Next.

12. Check that your table is going to be imported into the correct database, and then click Next.

13. On this screen you can edit the default table name that Microsoft SQL Server has chosen by clicking in the destination box.

For example renaming to [dbo].[BLPU_TABLE]

14. You must also click on 'Edit Mappings' in the bottom right hand corner.

15. In the new window you must remove the tick in the check box against the column which needs to be the primary key of the table. The Primary Keys for each table can be found in the technical specification document found here

<http://www.ordnancesurvey.co.uk/docs/technical-specifications/addressbase-premium-technical-specification-csv.pdf>

16. Click OK once the primary key alterations have been completed.

17. Click Next.

18. On this screen you can check the source column and the destination columns are correct.

19. Click Next.

20. A summary of your import will appear, if you want to continue click finish.

21. A report will be generated as your data is imported, and 'Success' should appear at the top once complete.

22. You may need to right click on your database and click refresh in order to see your new table listed.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Setting Primary & Foreign Keys

To create a Primary Key field or foreign key field you can run an SQL statement such as the below (given as an example). *Please note: the columns you are creating these constraints on cannot be null or allowed to be null (see notes above).*

Primary Key –

```
alter table dbo.ID21_BLPUs_Records
add primary key ([UPRN]);
```

Foreign Key –

```
alter table dbo.ID32_Class_Records
add foreign key (UPRN)
```

Creating the point geometry

You can also create point geometry in the BLPUs table using the X and Y coordinates or the Latitude and Longitude coordinate values.

This is achieved by running the following SQL statement:

Please note: this is using the British National Grid coordinates.

```
alter table dbo.ID21_BLPUs_Records
add geometry_column as geometry::Point([X_Coordinate],[Y_Coordinate], 27700);
```

The 27700 part represents the spatial reference of the data, in this case British National Grid.

7 HOW DO I LOAD THE GML DATA?

GML is an XML dialect which can be used to model geographic features. It was designed by the OGC as a means for people to share information regardless of the particular applications or technology that they use. In the first instance, GML was used to overcome the differences between different GIS applications by providing a neutral file format as an alternative to proprietary formats. However, because it is independent of applications there is no reason to assume that data exchanged in GML is being exchanged between GIS – it can be moved between databases or other types of application. GML therefore has a wider application than just GIS data transfer.

GML data can be viewed using software such as Snowflake GML Viewer –
<http://www.snowflakesoftware.com/osmmviewer/>

GML data can be loaded into a database using software such as Snowflake GoLoader.
<http://www.snowflakesoftware.com/2012/02/addressbase/>

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

8 HOW DO I CREATE A SINGLE-LINE OR MULTI-LINE ADDRESS?

8.1 Introduction

The AddressBase® products contain a variety of data fields which allow a user to construct, for a given addressable object, different forms of an address dependent on how the address is to be used.

There are two types of address contained in the AddressBase products:

- Delivery Point Address
- Geographic Address

These two address types come from different sources and are matched together by GeoPlace.

The Delivery Point Address is sourced from Royal Mail's PAF (Postcode Address File) which is a non-geocoded list of addresses. These addresses are used primarily as a 'mailing list' for postal purposes.

Geographic Addresses are maintained by contributing Local Authorities. The structure of a geographic address is based on the British Standard BS7666. These addresses are used to provide an accurate geographic locator for an object to aid, for example, service delivery, asset management, or command and control operations. They also represent the legal form of addresses as created under street naming and numbering legislation.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

High level data model

The AddressBase Premium data model accommodates both the Delivery Point Address and the geographic address by linking them using the UPRN as the key.

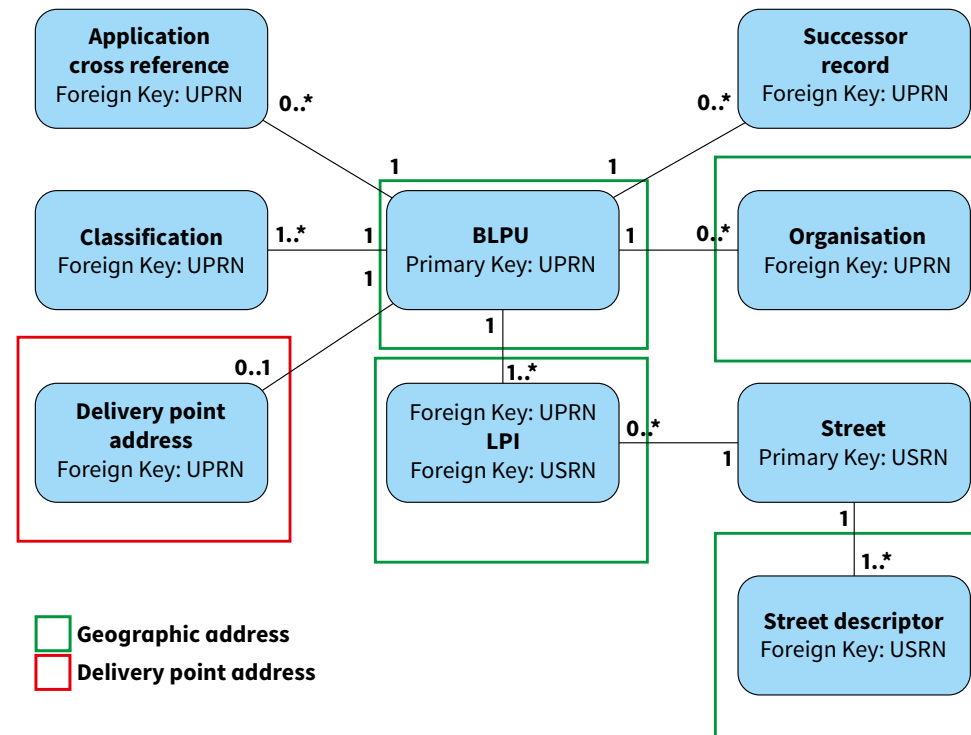


Figure 5: AddressBase Premium high level data model with Address 'types' highlighted

It is important to note the cardinality differences that the geographic and Delivery Point Address components have with the Basic Land and Property Unit (BLPU):

- The relationship between the DPA (Delivery Point Address) and the BLPU is 0..1 – 1

This means that the DPA is an optional component; therefore a DPA address will only be created when it has been matched to the geographic address. Moreover, only 1 DPA can be matched to a BLPU.

- The relationship between the Land and Property Identifier (LPI) and the BLPU is 1..* – 1

This means that the LPI component is mandatory; therefore at least 1 LPI must exist for each BLPU. Moreover, there can be more than 1 LPI linked to a single BLPU.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Together, these differences mean that there are more geographic addresses in the product than there are Delivery Point Addresses, because:

- a Not every BLPU has a Delivery Point (postal) Address – only those that have been matched to the Royal Mail PAF database.
- b A single BLPU can have only one Delivery Point Address.
- c A single BLPU can have more than one geographic address (because alternative and historical addresses are available in AddressBase Premium).

8.2 Background

A common requirement for customers using the AddressBase products is to build a single address label from core address elements.

There are two types of address label. The simplest is a full address on a single line with different elements separated by commas and spaces. This type of label is suited for displaying a full address within a tabular display, such as within an on-screen data grid or spreadsheet, or where a single-line printed address is most appropriate (such as within the text, header or footer of a letter):

ROSE COTTAGE, 5 MAIN STREET, ADDRESSVILLE, LONDON, SE99 9EX

The other type of formatted address is a multi-line address label. These are most often used on envelopes or at the tops of letters, where different parts of an address are separated onto different lines:

ROSE COTTAGE 5 MAIN STREET ADDRESSVILLE LONDON SE99 9EX

This document outlines a methodology for structuring and layering a single address label using AddressBase Premium. The methodology is largely applicable to AddressBase Plus for building geographic addresses (with the exception that all the fields are within a single table, so table joins are not necessary, and some of the status filters will not be present, such as 'logical_status'). It is also applicable to AddressBase when building address labels for Delivery Point Addresses.

This guide provides the suggested logic to build both Delivery Point and Geographic Addresses.

The rules in this guidance are suggestions only and can be used for visual display of full addresses. It is strongly recommended that address components are stored in the relational format in which they are provided in order to allow maximum flexibility of use and derived value.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

8.3 Delivery Point Address (PAF Address)

Description:

A Delivery Point Address contains information sourced from Royal Mail (PAF). Stringent rules are used to match these addresses to the geographic address and assign a common UPRN to link addresses from the two addressing sources together in the data model.

To construct a single address label based purely on the Royal Mail PAF address fields, the following attributes can be used to build a Delivery Point Address label.

Table 1 – Delivery Point Address Components

Delivery Point Address Component	Type
DEPARTMENT_NAME	Character
ORGANISATION_NAME	Character
SUB_BUILDING_NAME	Character
BUILDING_NAME	Character
BUILDING_NUMBER	Integer
PO_BOX_NUMBER	Integer
DEPENDENT_THOROUGHFARE OR WELSH_DEPENDENT_THOROUGHFARE	Character
THOROUGHFARE OR WELSH_THOROUGHFARE	Character
DOUBLE_DEPENDENT_LOCALITY OR WELSH_DOUBLE_DEPENDENT_LOCALITY	Character
DEPENDENT_LOCALITY OR WELSH_DEPENDENT_LOCALITY	Character
POST_TOWN OR WELSH_POST_TOWN	Character
POSTCODE	Character

These address components are listed in the correct order in which they should appear on an address label.

It should be noted that most of the PAF fields are optional and may contain null values (or zero, in the cases of 'BUILDING NUMBER' and 'PO BOX NUMBER'). In these cases, those fields should be omitted. Where an 'OR' exists, there may be a choice between English and Welsh languages (although if the preferred language field is empty, the other should be used if it contains a value).

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

The following (entirely fictional) example shows all of the PAF fields filled in (apart from the PO Box number), and how they should be ordered in a single address label.

Delivery Point Address Component	Example
DEPARTMENT_NAME	CUSTOMER SERVICE DEPARTMENT
ORGANISATION_NAME	JW SIMPSON LTD.
SUB_BUILDING_NAME	UNIT 3
BUILDING_NAME	THE OLD FORGE
BUILDING_NUMBER	7
PO_BOX_NUMBER	
DEPENDENT_THOROUGHFARE	RICHMOND TERRACE
THOROUGHFARE	MAIN STREET
DOUBLE_DEPENDENT_LOCALITY	HOOK
DEPENDENT_LOCALITY	WARSASH
POST_TOWN	SOUTHAMPTON
POSTCODE	SO99 9ZZ

In cases where a PO BOX NUMBER is present, it will only be described in the data as an integer. In order to properly format these addresses when generating an address label, these integers should be prefixed with the text 'PO BOX', as shown in the following example.

Delivery Point Address Component	Data Content	Formatted output
ORGANISATION_NAME	'JWS CONSULTING'	JWS CONSULTING
PO_BOX_NUMBER	5422	PO BOX 5422
THOROUGHFARE	'HIGH STREET'	HIGH STREET
POST_TOWN	'SPRINGFIELD'	SPRINGFIELD
POSTCODE	'SP77 0SF'	SP77 0SF

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Where null or empty string values exist (for character fields) or zeros or nulls (for integer fields), those fields should be entirely omitted from the output; however, the order in which the fields should be concatenated always remains the same.

Delivery Point Address Component	Data content	Formatted output
DEPARTMENT_NAME	null	
ORGANISATION_NAME	'TM MOTORS'	TM MOTORS
SUB_BUILDING_NAME	null	
BUILDING_NAME	'THE OLD BARN'	THE OLD BARN
BUILDING_NUMBER	0 (or null)	
PO_BOX_NUMBER	0 (or null)	
DEPENDENT_THOROUGHFARE	null	
THOROUGHFARE	'HORSHAM LANE'	HORSHAM LANE
DOUBLE_DEPENDENT_LOCALITY	null	
DEPENDENT_LOCALITY	null	
POST_TOWN	'HORSHAM'	HORSHAM
POSTCODE	'RH12 1EQ'	RH12 1EQ

8.3.1 Building a single line Delivery Point Address

Building a single-line, formatted address for a delivery point is relatively straightforward. All the fields should be checked in the order described in Table 1 – Delivery Point Address Components, and those that have values should be concatenated together into a single line. Generally, address components should be separated by a comma followed by a single space (' '), although sometimes only a space is used between a building number and a thoroughfare name; this is down to personal preference.

Example SQL logic (single line address label):

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

```
SELECT
uprn,
(
CASE WHEN department_name IS NOT NULL THEN department_name || ', ' ELSE '' END
|| CASE WHEN organisation_name IS NOT NULL THEN organisation_name || ', ' ELSE '' END
|| CASE WHEN sub_building_name IS NOT NULL THEN sub_building_name || ', ' ELSE '' END
|| CASE WHEN building_name IS NOT NULL THEN building_name || ', ' ELSE '' END
|| CASE WHEN building_number IS NOT NULL THEN building_number || ' ' ELSE '' END
|| CASE WHEN po_box_number IS NOT NULL THEN 'PO BOX ' || po_box_number || ', ' ELSE '' END
|| CASE WHEN dep_thoroughfare IS NOT NULL THEN dep_thoroughfare || ', ' ELSE '' END
|| CASE WHEN thoroughfare IS NOT NULL THEN thoroughfare || ', ' ELSE '' END
|| CASE WHEN dou_dep_locality IS NOT NULL THEN dou_dep_locality || ', ' ELSE '' END
|| CASE WHEN dep_locality IS NOT NULL THEN dep_locality || ', ' ELSE '' END
|| CASE WHEN post_town IS NOT NULL THEN post_town || ', ' ELSE '' END
|| postcode
) AS dpa_single_address_label
FROM addressbase_premium.delivery_point;
```

Notes:

- 1 The SQL operator for concatenating text is a double pipe ('||').
- 2 CASE blocks have been used to test each of the fields for null values before concatenating its contents (along with a suitable separator – either ‘, ‘ or ‘ ‘).
- 3 This example formats an English version of an address. In order to obtain a Welsh address, the thoroughfare, locality and post town fields can be substituted (for example, ‘welsh_thoroughfare’ instead of ‘thoroughfare’, and so on...). SQL ‘Coalesce’ statements could be added in this case to substitute the English values when a Welsh language field value is null.
- 4 The field names and table names used are illustrative and may vary between databases.
- 5 Depending on the database schema and data loading method used, it may be necessary to test some fields for empty strings (‘’) or zero values (for integer fields) instead of, or as well as testing for NULLs.
6. If you are using PostGres (PostGIS) it might be beneficial to substitute the ‘IS NOT NULL’ with ‘!= ‘. This should improve the overall appearance of the output.

8.3.2 Building a multi-line Delivery Point Address

Splitting a Delivery Point Address into multiple lines is more complicated. There are several rules to consider in order to avoid having very short lines (for example, just a building number) or very long lines within the formatted address. A summary of these rules is as follows:

- Generally, if there is a building number, it should appear on the same line as the thoroughfare (or dependent thoroughfare) name. If there is no thoroughfare name information, it should appear on the same line as the first locality name.
- In cases where building numbers have been placed in the building name field due to the presence of a letter suffix (for example, '11A') or a number range separator (for example, '3-5'), these should be detected and placed on the same line as the thoroughfare name in the same way as a building number (or on the first locality line, if no thoroughfare name is present).

In most other cases, the building name, if present, should appear on a separate line above the thoroughfare_ name (or dependent thoroughfare) name (or locality line if no thoroughfare name is present).

- Similar tests should be applied to the SUB_BUILDING_NAME field: if this field contains a number, a number with a suffix, or a numeric range, it should precede the building name on the same line. In most other cases, it should appear on a separate line above the building name.

For much more detailed information on how to build a multi-line Delivery Point Address, please consult pages 26–37 of the [PAF Programmers Guide](#).

8.4 Geographic Address (Local Authority Address)

Description:

The structure of a geographic address is based on the British Standard BS7666 and is split into a number of components. This means that in order to construct a complete address label, for example, on an envelope, database form or GIS display, the components need to be constructed according to a set of rules.

This chapter contains principles that should be used when rendering Geographic Addresses from the AddressBase products in order to generate unambiguous and fit for purpose address labels.

Within the AddressBase products the core property level address information is stored within the Land and Property Identifier (LPI), in particular the Primary Addressable Object (PAO) and Secondary Addressable Object (SAO) fields. The additional attribution required to build a full address label is maintained in the BLPU (postcode_locator), ORGANISATION (organisation) and STREET_DESCRIPTOR (street_description, locality_name, town_name, administrative_area) tables.

For a full description of PAOs and SAOs, and the complete set of AddressBase fields, please refer to the relevant AddressBase products technical specification document.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Constructing a single address label from the Geographic Address Fields

To construct a single address label based purely on the BS7666 address fields, the following attributes should be used to build a geographic address label.

Table 2 – Geographic Address Components

Table	Geographic Address Component
Organisation	ORGANISATION
LPI	SAO_TEXT
LPI	SAO_START_NUMBER
LPI	SAO_START_SUFFIX
LPI	SAO_END_NUMBER
LPI	SAO_END_SUFFIX
LPI	PAO_TEXT
LPI	PAO_START_NUMBER
LPI	PAO_START_SUFFIX
LPI	PAO_END_NUMBER
LPI	PAO_END_SUFFIX
Street Descriptor	STREET_DESCRIPTION
Street Descriptor	LOCALITY_NAME
Street Descriptor	TOWN_NAME
Street Descriptor	ADMINISTRATIVE_AREA*
BLPU	POSTCODE_LOCATOR

* ADMINISTRATIVE_AREA is optional because it is common for this field to be the same as the TOWN_NAME. Sometimes, however, this field will help users construct a more complete address.

These address components are listed in the correct order in which they should appear on an address label.

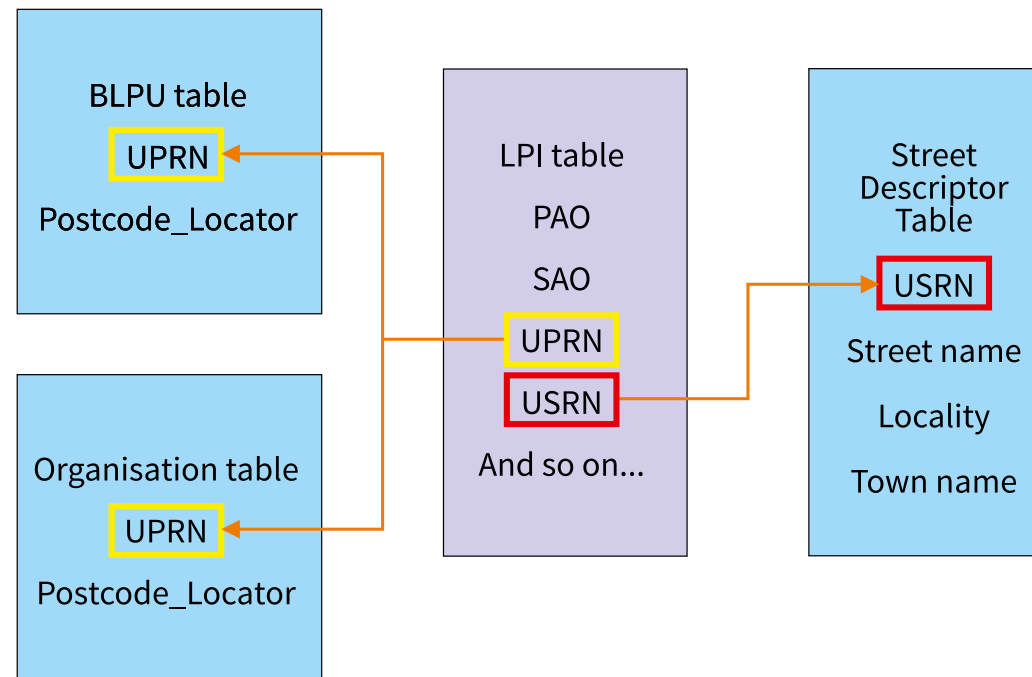
8.4.1 Linking Address Components

The Land and Property Identifier (LPI) table includes the primary and secondary addressable object fields; however, in order to obtain the rest of the address, it is necessary to join this to the Street Descriptor table to pick up the street name, locality and town information (using the Unique Street Reference Number – USRN as the key), and also to the Organisation and BLPU tables (using the UPRN as the key) to pick up the organisation names and postcodes respectively.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

The following diagram shows the links that need to be made in order to build a full geographic address from the different BS7666 components in AddressBase Premium.

Figure 6: Table join logic for geographic address label



Using the LPI table as a starting point, the remaining address components can be picked up using table joins to the other tables on UPRNs and USRNs. Note that there can be more than one LPI for each UPRN, so if only one address is required per BLPU, the LPI with logical_status = 1 (approved) should be selected (there can be only one approved LPI per BLPU).

8.4.2 Rendering SAOs and PAOs

When building a single address label it may be necessary to concatenate the various SAO fields and PAO fields together (respectively). These fields contain any property names, numbers, number ranges or suffixes that apply to an address.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

A PAO number/range string should be constructed from the *PAO_START_NUMBER*, *PAO_START_SUFFIX*, *PAO_END_NUMBER* and *PAO_END_SUFFIX* fields as illustrated in the following table.

Attribute	Example 1	Example 2	Example 3	Example 4
PAO_START_NUMBER	1	1	1	1
PAO_START_SUFFIX		A		A
PAO_END_NUMBER			5	5
PAO_END_SUFFIX				C
Rendered PAO range	1	1A	1-5	1A-5C

Similarly, a SAO number/range string should be constructed from the *SAO_START_NUMBER*, *SAO_START_SUFFIX*, *SAO_END_NUMBER* and *SAO_END_SUFFIX* fields as illustrated in the following table.

Attribute	Example 1	Example 2	Example 3	Example 4
SAO_START_NUMBER	1	1	1	1
SAO_START_SUFFIX		A		A
SAO_END_NUMBER			5	5
SAO_END_SUFFIX				C
Rendered SAO range	1	1A	1-5	1A-5C

In addition to the numeric range fields described above, there are also *PAO_text* and *SAO_text* fields. These fields may be populated instead of, or as well as, the numeric range fields. In both cases, if both text and a numeric range string are present, the text should appear before the numeric range in any formatted address.

Attribute	Example 1	Example 2	Example 3	Example 4
PAO (number string)	1	1A	1A	
PAO (text)			Rose Cottage	Rose Cottage
Rendered PAO (showing street name location)	1 <street>	1A <street>	Rose Cottage, 1A <street>	Rose Cottage, <street>

Please note: for primary addressable objects (PAOs), there will always be either a text entry, or a numeric/range entry, or both. This is not the case for secondary addressable objects (SAOs), which may be entirely absent for a given address.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

8.4.3 Street description, town, locality and administrative area names

These fields are all found within the 'Street Descriptor' table in AddressBase Premium. The street description, town name (where street type is 1 or 2) and administrative area names are always present, while the locality name may be empty.

The ADMINISTRATIVE_AREA field always contains a value; however, this value will not always enhance an address, but in some cases it will. In particular, a check should be made to ensure that it is not the same as the value in the TOWN_NAME field, as is often the case.

For example, in the following case, the administrative area adds value to the address.

Administrative area not included Administrative area included (BURY)

GEO_SINGLE_ADDRESS_LABEL	Vs.	GEO_SINGLE_ADDRESS_LABEL
34, CROW LANE, RAMSBOTTOM, BL0 9BR		34, CROW LANE, RAMSBOTTOM, BURY, BL0 9BR

In other cases, the administrative area name will simply contain the local authority name, which would not traditionally form part of a single- or multi-line address, but can be included to add additional information to an address label; its inclusion is largely down to business requirements and/or personal preference, however, it may also be useful to 'de-duplicate' some geographic addresses.

The following (entirely fictional) example shows all of the BS7666 geographic address fields filled in, and how they should be ordered in a single address label.

Table 3 – Geographic Address Formatting

Geographic Address Component	Example
ORGANISATION	JW SIMPSON LTD
SAO_TEXT	THE ANNEXE
SAO (number/range string)*	1A
PAO_TEXT	THE OLD MILL
PAO (number/range string)*	7-9
STREET_DESCRIPTION	MAIN STREET
LOCALITY_NAME	HOOK
TOWN_NAME	WARSASH
ADMINISTRATIVE_AREA	SOUTHAMPTON
POSTCODE_LOCATOR	SO99 9ZZ

* The number/range strings are built from the relevant PAO/SAO start_number, start_suffix, end_number and end_suffix fields, as described above, and formatted as character strings.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Where an administrative area matches the town name, it should always be omitted.

Delivery Point Address Component	Data content	Formatted output
PAO_TEXT	'Highbury House'	Highbury House
STREET_DESCRIPTION	'High Street'	High Street
TOWN_NAME	'Southampton'	SOUTHAMPTON
ADMINISTRATIVE_AREA	'Southampton'	
POSTCODE_LOCATOR	'SO77 0SF'	SO77 0SF

Where null or empty string values exist (for character fields) or zeros or nulls (for integer fields), those fields should be entirely omitted from the output; however, the order in which the fields should be concatenated always remains the same.

Delivery Point Address Component	Data content	Formatted output
ORGANISATION	'TM Motors'	TM Motors
SAO_TEXT	null	
SAO (number/range string)*	null	
PAO_TEXT	'The Old Barn'	THE OLD BARN
PAO (number/range string)*	'1'	1
STREET_DESCRIPTION	'Horsham Lane'	HORSHAM LANE
LOCALITY_NAME	null	
TOWN_NAME	'Horsham'	HORSHAM
ADMINISTRATIVE_AREA	'Horsham'	* Duplicate name omitted
POSTCODE_LOCATOR	'RH12 1EQ'	'RH12 1EQ'

Building a single-line geographic address

Building a single-line, formatted address for a delivery point is slightly more complicated than for a Delivery Point Address due to the need to preformat the SAO and PAO number/range strings, and the need to join tables together (in AddressBase Premium). However, once this is done the process is largely the same as before: the calculated fields should be checked in the order described above in Table 3 – Geographic Address Formatting, and those that have values should be concatenated together into a single line. Generally, address components should be separated by a comma followed by a single space (' '), although sometimes only a space is used between a PAO number/range string and a street description; this is down to personal preference.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Example SQL logic (single line address label).

```

SELECT
l.uprn,
l.sao_text, l.sao_start_number, l.sao_start_suffix, l.sao_end_number, l.sao_end_suffix,
l.pao_text, l.pao_start_number, l.pao_start_suffix, l.pao_end_number, l.pao_end_suffix,
s.street_description,
s.locality_name,
b.postcode_locator,
/*
Concatenate a single GEOGRAPHIC address line label

This code takes into account all possible combinations os pao/sao numbers and suffixes
*/
case
when o.organisation != '' then o.organisation||', ' else '' end
--Secondary Addressable Information-----
||case when l.sao_text != '' then l.sao_text||', ' else '' end
--case statement for different combinations of the sao start numbers (e.g. if no sao start suffix)
||case

when l.sao_start_number is not null and l.sao_start_suffix = '' and l.sao_end_number is null

then l.sao_start_number::varchar(4)||', '

when l.sao_start_number is null then '' else l.sao_start_number::varchar(4)||'' end
--case statement for different combinations of the sao start suffixes (e.g. if no sao end number)
||case

when l.sao_start_suffix != '' and l.sao_end_number is null then l.sao_start_suffix||', '

when l.sao_start_suffix != '' and l.sao_end_number is not null then l.sao_start_suffix else '' end
--Add a '-' between the start and end of the secondary address (e.g. only when sao start and sao end)
||case

when l.sao_end_suffix != '' and l.sao_end_number is not null then '-'

when l.sao_start_number is not null and l.sao_end_number is not null then '-' else '' end
--case statement for different combinations of the sao end numbers and sao end suffixes
||case

when l.sao_end_number is not null and l.sao_end_suffix = '' then l.sao_end_number::varchar(4)||', '

when l.sao_end_number is null then '' else l.sao_end_number::varchar(4) end

```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

```

--pao end suffix
||case when l.sao_end_suffix != ' then l.sao_end_suffix||', ' else ' end
--Primary Addressable
Information-----
||case when l.pao_text != ' then l.pao_text||', ' else ' end

--case statement for different combinations of the pao start numbers (e.g. if no pao start suffix)
||case

when l.pao_start_number is not null and l.pao_start_suffix = ' and l.pao_end_number is null

then l.pao_start_number::varchar(4)||', '

when l.pao_start_number is null then '

else l.pao_start_number::varchar(4)||' end

--case statement for different combinations of the pao start suffixes (e.g. if no pao end number)
||case

when l.pao_start_suffix != ' and l.pao_end_number is null then l.pao_start_suffix||', '

when l.pao_start_suffix != ' and l.pao_end_number is not null then l.pao_start_suffix

else ' end

--Add a '-' between the start and end of the primary address (e.g. only when pao start and pao end)
||case

when l.pao_end_suffix != ' and l.pao_end_number is not null then '-'

when l.pao_start_number is not null and l.pao_end_number is not null then '-'

else ' end

--case statement for different combinations of the pao end numbers and pao end suffixes
||case

when l.pao_end_number is not null and l.pao_end_suffix = ' then l.pao_end_number::varchar(4)||', '

when l.pao_end_number is null then '

else l.pao_end_number::varchar(4) end

```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

```

--pao end suffix
||case when l.pao_end_suffix != '' then l.pao_end_suffix||', ' else '' end

--Street Information-----
||case when s.street_description != '' then s.street_description||', ' else '' end

--Locality-----
||case when s.locality_name != '' then s.locality_name||', ' else '' end

--Town-----
||case when s.town_name != '' then s.town_name||', ' else '' end

--Postcode-----
||case when b.postcode_locator != '' then b.postcode_locator else '' end

AS geo_single_address_label
FROM
abp_blpu AS b, abp_street_descriptor AS s,
abp_lpi AS l full outer join abp_organisation AS o on (l.uprn = o.uprn)
WHERE b.uprn = l.uprn
AND l.usrn = s.usrn
AND l.language = s.language;

```

Notes:

- 1 The SQL operator for concatenating text is a double pipe ('||').
- 2 CASE blocks have been used to test each of the fields for null values before concatenating its contents (along with a suitable separator – either ', ' or ' ').
- 3 The field names and table names used are illustrative and may vary between databases.
- 4 Depending on the database schema and data loading method used, it may be necessary to test some fields for empty strings ('') or zero values (for integer fields) instead of, or as well as testing for NULLs.
5. If you want no duplicate UPRNs to be returned an additional DISTINCT line 2 needs to read DISTINCT(l.UPRN)

8.4.4 Building a multi-line geographic address

Splitting a geographic address into multiple lines is more complex. As with Delivery Point Addresses, there are several rules to consider in order to avoid having very short lines (for example, just a building number) or very long lines within the formatted address. A summary of these rules is as follows:

- Generally, if there is a PAO number/range string, it should appear on the same line as the street description.

Example:	11A MAIN STREET
----------	-----------------

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- If there is a PAO_text value, it should always appear on the line above the street name (or on the line above the <pao number string> + <street name> where there is a PAO number/range).

Example (pao_text only):

ROSE COTTAGE,
MAIN STREET

Example (pao_text and pao number or range):

ROSE COTTAGE,
11A MAIN STREET

- If there is a SAO_text value, it should appear on a separate line above the PAO_text line (or the pao number/range + street line where there is no PAO_text value).

Example (SAO_text value only, with PAO_text value only):

THE ANNEXE,
ROSE COURT,
MAIN STREET

Example (SAO_text value only, with PAO number/range only):

THE ANNEXE,
11A MAIN STREET

- If there is a SAO number/range value, it should be inserted either on the same line as the PAO_text (if there is a PAO_text value), or on the same line as the PAO number/range + street name (if there is only a PAO number/range value and no PAO_text value). If there are both PAO_text and a PAO number/range, then the SAO number/range should appear on the same line as the PAO_text, and the PAO number/range should appear on the street line.

Example (SAO number/range value only, and PAO_text value only):

1A ROSE COURT,
MAIN STREET

Example (SAO number/range value only, and PAO number/range value only):

1-3, 11A MAIN STREET

Example (SAO number/range value only, and both PAO_text and PAO number/range values):

1A ROSE COURT,
11A MAIN STREET

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- If there is a SAO_text value, it should always appear on its own line.

Example (SAO_text value only with PAO_text only):

THE ANNEXE,
ROSE COTTAGE,
MAIN STREET

Example (SAO_text and SAO number/range and PAO_text and PAO number/range):

WARDEN'S FLAT,
1A ROSE COURT,
11A MAIN STREET

- If there is an organisation name, it should always appear alone as the top line of the address.

Example (organisation name along with all PAO + SAO fields):

COTTAGE INDUSTRY LTD,
THE ANNEXE,
1A ROSE COURT,
11A MAIN STREET

- The locality name (if present) should appear on a separate line beneath the street description, followed by the town name on the line below it. If there is no locality name, the town name should appear alone on the line beneath the street description.

Example (locality and town name present):

...(first part of address, formatted as described above) ...
MAIN STREET,
HIGHFIELD,
SOUTHAMPTON

Example (town name only):

...(first part of address, formatted as described above) ...
HIGH STREET,
SOUTHAMPTON

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

- If the administrative area name is desired, and if it is not a duplicate of the town name, it may optionally be included on a separate line beneath the town name.

Example (administrative area name included):
 ...(first part of address, formatted as described above) ...
 MAIN STREET,
 WINDSOR,
 ROYAL BOROUGH OF WINDSOR AND MAIDENHEAD

- Finally, the postcode locator, if present, should be inserted on the final line of the address.

Example (with postcode_locator on final line):
 ...(first part of address, formatted as described above) ...
 HIGH STREET,
 MILTON,
 ML99 0WW

8.5 Creating mailing lists

Given that AddressBase Premium and Plus contain two different types of address, a decision needs to be made, based on business requirements, whether to use geographic or Delivery Point Addresses, or a mixture of the two.

The following two options should be considered:

- a) Use Delivery Point Addresses whenever they are available, and when they are not, use a geographic address.
- b) Use geographic addresses in all cases.

Depending on business requirements, in some user interfaces, it may be worth considering displaying both forms of an address, since this will provide the maximum information available about a given BLPU. 'Mixing and matching' components from the two different forms of address into a single address label is not recommended as this is likely to cause confusion in some instances.

8.5.1 Address status

When building your query to extract a mailing list, it is important that you consider filtering your results based on the address status and type. The status of an address is often something that needs to be considered when working with address data. Questions like 'is the addressable object in planning, being constructed, current, demolished or accurately positioned?' need to be answered before AddressBase Premium can be used effectively.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

The table below offers guidance on what status filters should be considered. Please see the [technical specification](#) for more information about each of these attributes.

Please note: the logical status attributes are only present in the AddressBase Premium product. AddressBase Plus only contains records that are 'Approved' (logical status code 1).

Status attributes	Table	Use	Values
LOGICAL_STATUS	BLPU	Describes where a land or property unit is in its lifecycle.	1 – Approved
			6 – Provisional
			8 – Historical
LOGICAL_STATUS	LPI	Describes where an address is in its lifecycle.	1 – Approved
			3 – Alternative
			6 – Provisional
			8 – Historical
BLPU_STATE_CODE (optional)	BLPU	Informs the user what physical state the land or property is in (for example, 'under construction', 'in use', 'demolished').	1 – Under construction
			2 – In use
			3 – Unoccupied
			4 – No longer existing
			6 – Planning permission granted null
			– Unknown or N/A
RPC_CODE	BLPU	To ascertain how accurate the coordinate is. Use in conjunction with the postcode_locator field to understand the accuracy of the address' position.	1 – Visual centre
			2 – General internal point
			3 – SW corner of 100m grid ref
			4 – Start of referenced street
			5 – Postcode unit point
			9 – Centre of Local Authority area
ADDRESSBASE_POSTAL	BLPU	This field can be used to limit your records based on whether they are capable of receiving mail or not.	D – A record which is linked to PAF
			C – A record which is postal and has a parent linked to PAF
			L – A record identified as postal via Local Authority information
			N – Not a postal address
LANGUAGE	LPI STREET_DESCRIPTOR	This information can be used to limit your records based on the language.	ENG – English
			CYM – Welsh
			GAE – Gaelic

8.5.2 Other filters

AddressBase Premium is a rich addressing dataset that contains a wealth of other attributes that could be used in conjunction with address labels. For example, classification can be used to target certain types of property; or OS MasterMap® Topography TOID cross references can be used to link address labels to Topographic objects and viewed in a GIS.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

9 SEARCHING FOR ADDRESSES USING ADDRESSBASE PREMIUM

A common requirement for customers using the AddressBase products is to search for properties using full or partial addresses. Address searches may return a large number of addresses, a short list of possibilities, a single match or no results, depending on the search criteria.

There are many potential ways of implementing an address search, from free text queries through to structured address component searches. This guide will illustrate two such approaches that may be used when working with AddressBase Premium.

These methods are not intended as recommendations – merely as examples to illustrate how to get maximum value out of the product when implementing an address search function.

One type of search implementation involves a single ‘search engine’ style text box, into which a user can type some or all of an address:

Find address:

CLOVER AVENUE, SW99 9ZZ

Results:

1, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ
2, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ
3, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ
4, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ
5, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ
6, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ
7, Clover Avenue, Fieldtown, Addressville, SW99 9ZZ

In this scenario, the user can choose to type anything in the box, which may be just one component of an address (for example, a postcode, street name or building name), several parts of an address (for example, street name + town name, house name + postcode, and so on), or even (rarely) a complete address.

There may or may not be commas between search items, the user may or may not have capitalised some letters, and so on. In short, with this search method, there is no structure to the user input and the search methodology must be designed with this in mind.

The other common type of implementation for address searches involves guiding the user to enter search criteria in a structured way (for example, with a different text box for each major address component).

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Find Address:

House name:	<input type="text" value="Rose Cottage"/>	House number:	<input type="text"/>
Street name:	<input type="text" value="Main Street"/>		
Locality:	<input type="text"/>	Town:	<input type="text"/>
Postcode:	<input type="text"/>		<input type="button" value="Search"/>

Results:

Rose Cottage, Main Street, Fieldtown, Addressville, SW99 9ZZ
 Rose Cottage, Main Street, Ashford, AS45 9PP
 Rose Cottage, Main Street, Buxtew, Monley, MO88 4TY
 And so on...

This method guides the user to enter known components of an address and also creates a predictable user input structure around which to build a search function. While generally simpler to use and implement, it can be less user-friendly – particularly in cases where it is not obvious which box to type an address component into (for example, ‘Richmond Terrace’ – is it a building name or a street? And so on).

This document outlines possible solutions for implementing both of the search methods described above using AddressBase Premium. It should be used alongside the document on formatting single address labels using the AddressBase products. Note that the methods described here may be adapted to work with both AddressBase Plus and AddressBase; however, in the case of AddressBase Plus, it is not possible to search for alternative or historical addresses, and AddressBase provides postal (delivery point) addresses only, so the geographic guidance does not apply to this product.

9.1 Understanding the different addresses available in AddressBase Premium

As described in chapter 8, at a high level, AddressBase Premium provides two different types of address – the Delivery Point Address and the Geographic Address.

However, for some Geographic Addresses an alternative, provisional, historical or language variant* of the approved record may also be provided as well as the approved address (all sharing the same UPRN).

*The Delivery Point Address also optionally contains a Welsh variant of the Royal Mail record.

The following table outlines what these addresses are and how to access them in the product.

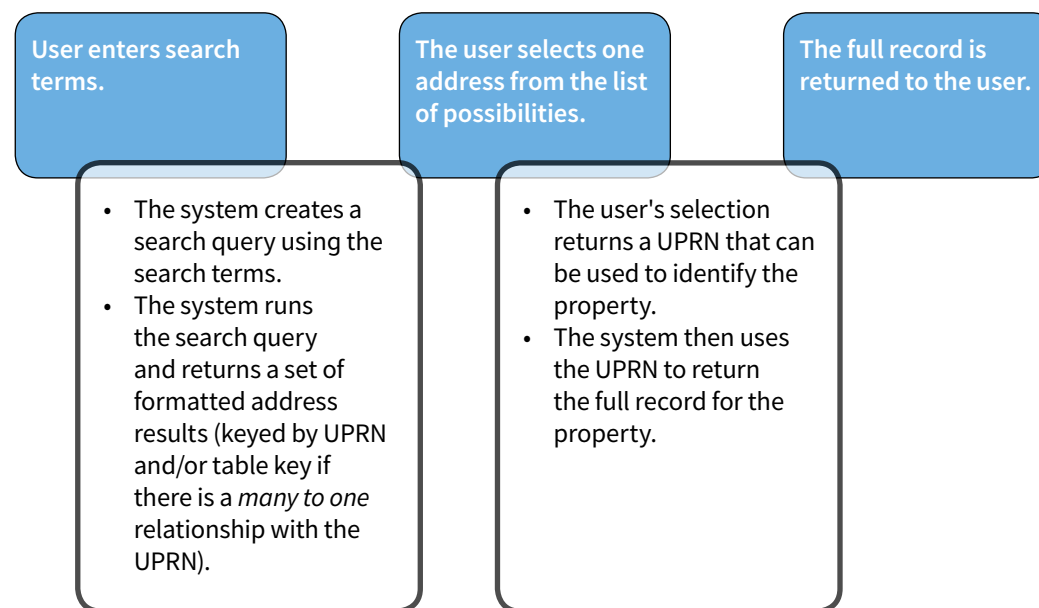
Address type	What is it?	Where is it?
Delivery Point Address	The postal address, as assigned to the property by Royal Mail (and widely used by the public).	Delivery Point Address table.
Approved Geographic Address	The legal/approved address as assigned by the local naming and numbering authority.	LPI table with Logical Status = 1, joined to street descriptor, organisation and BLPU tables.
Provisional Geographic Address	Provisional addresses may exist for a property from the moment that an address has been granted planning permission to be built to the time when construction has been completed.	LPI table with Logical Status = 6, joined to street descriptor, organisation and BLPU tables.
Alternative Geographic Address	Any alternative addresses that may exist for this property (for example, alternative names). There may be more than one alternative address per property.	LPI table with Logical Status = 3, joined to street descriptor, organisation and BLPU tables.
Historical Geographic Address	Any historical addresses (recorded since data collection began) that may have existed in the past for this property (for example, previous house names or business names, and so on). There may be more than one historical address per property.	LPI table with Logical Status = 8, joined to street descriptor, organisation and BLPU tables.
Alternative language	Where there is more than one official language in use – that is English and Welsh in Wales, and English and Scottish Gaelic in Scotland – there may be two versions of a Geographic address, one for each language.	LPI table with Language Code = CYM or GAE and Street_Descriptor table with Language Code = CYM or GAE.

To provide the most comprehensive address search functionality, any implementation of a search function should make full use of all these different address types.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

9.2 The search process

An address search operation typically requires two stages of interaction from a user, and several processing steps from the underlying IT system. These steps can be summarised in the following diagram:



The second user interaction can be omitted if there is only one result returned from the query. In almost all cases, there should be an option to 'search again' at the second and third stages in case no results are returned, or if none of the options shown is the required address.

Of course, different applications require different approaches; however, the general principles of the above process apply in all cases where an address is searched for based on user-entered criteria.

9.3 Generating a search query from structured user input

Within an interface that accepts structured user input for an address search, it is necessary to 'map' the fields presented to the user with those found within AddressBase Premium. In particular, any query will need to test multiple fields for a given input and will need to combine result sets from two different address formats (Delivery Point Address and Geographic Address) in order to produce the most complete result set.

Generally a search form will describe a 'simplified' view of an address in order to keep the user interface tidy and intuitive. Users may be given a set of text boxes to fill in, generally including building name, building number, street name, locality name, town name, and postcode. The relationships between some common search fields and the fields found in AddressBase Premium are as follows:

Search Box	Mapped Delivery Point fields	Mapped geographic fields
Business Name	Organisation_Name	Organisation PAO_Text SAO_Text
Flat/Subdivision Name	Sub_Building_Name Department_Name	SAO_Text
Flat/Subdivision Number	Sub_Building_Name	SAO_StartNumber SAO_StartSuffix SAO_EndNumber SAO_EndSuffix
Building Name	Building_Name	PAO_Text
Building Number	Building_Number Building_Name (in cases where a suffix or range is present)	PAO_StartNumber PAO_StartSuffix PAO_EndNumber PAO_EndSuffix
Street	Thoroughfare Dependent_Thoroughfare	Street PAO_Text
Locality	Dependent_Locality Double_Dependent_Locality	Locality Town Street
Town	Dependent_Locality Post_Town	Town Locality
Postcode	Postcode	Postcode_Locator

The above mapping is an example only and it is possible to break the search fields down differently; in which case a different mapping would be required. The important thing is to consider all possibilities for how data might be recorded. For example, a business name can sometimes appear as an organisation name or a building/Primary Addressable Object (PAO) name depending on circumstances, so both must be checked when creating a search query.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Numbers need to be handled especially carefully due to the presence of suffixes and ranges. There are two options for structuring the search input in these cases: a single 'number' box can be used (as shown above) which will then require some string manipulation to split the input into the appropriate numeric range and suffix components in order to search the geographic addresses; or four boxes can be provided for each number (start number, start suffix, end number, end suffix) which would then need to be combined into an appropriate string to search the Delivery Point Addresses.

9.4 Structuring the query for a structured address search

The basic rules to follow when generating a search query from structured input are as follows:

1. Ignore any search boxes that are not filled in with values.
2. Where a value is entered, assume that a match on at least one of the mapped fields is essential.

In SQL query terms, this means that each search term should generate a sub-query that searches each of the mapped fields (using OR), and that these sub-queries should then be combined together (using AND) into a single search query. The following SQL code illustrates this (for the Delivery Point Address search only) where a street, locality and town name have been entered by the user:

```
SELECT dp.UPRN, GetFormattedAddress(dp.*) FROM abp_delivery_point dp
WHERE (dp.thoroughfare = streetsearchtext OR dp.dependent_thoroughfare = streetsearchtext) AND
(dp.dependent_locality = localitysearchtext OR dp.double_dependent_locality = localitysearchtext) AND
(dp.dependent_locality = townsearchtext OR dp.post_town = townsearchtext)
```

In the above example, 'streetsearchtext', 'localitysearchtext', and 'townsearchtext' (shown in blue) represent user-entered search terms (which could be parameters within an SQL function) and the GetFormattedAddress(*) function is a hypothetical user-defined function that returns the formatted address as a single string (suitable for display in the user interface). For more information on formatting addresses, please read chapter 8.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

On top of this, for a complete query, the two different types of addresses should be queried separately (geographic and Delivery Point Addresses), and the two result sets should be amalgamated into a single set using a UNION. The following example builds upon the previous example to include geographic addresses as well as Delivery Point Addresses:

```
SELECT dp.UPRN, GetFormattedAddress(dp.*) FROM abp_delivery_point dp
WHERE (dp.thoroughfare = streetsearchtext OR dp.dependent_thoroughfare = streetsearchtext) AND
(dp.dependent_locality = localitysearchtext OR dp.double_dependent_locality = localitysearchtext) AND
(dp.dependent_locality = townsearchtext OR dp.post_town = townsearchtext)
UNION
SELECT b.uprn, GetFormattedAddress(b.*, l.*, s.*, o.*) FROM abp.blpu b
INNER JOIN abp.lpi l ON l.uprn = b.uprn
INNER JOIN abp.street_descriptor s ON s.usrn = b.usrn
LEFT JOIN abp.organisation o ON o.uprn = b.uprn WHERE
(s.street_name = streetsearchtext OR l.pao_text = streetsearchtext) AND
(s.locality = localitysearchtext OR s.town = localitysearchtext OR s.street_name = localitysearchtext) AND
(s.town = townsearchtext OR s.locality = townsearchtext)
```

The geographic query requires four joins between the BLPU, LPI, Street_Descriptor and Organisation tables in order to access all the fields required to build an address.

The SQL UNION operator will combine the two result sets, discarding any exact duplicates (retaining the exact duplicates requires the use of UNION ALL, but that is not desirable in this example).

The resulting output from this query will be a set of search results: formatted addresses along with their UPRN. Exact duplicates will be omitted, but all ‘variations’ of the same address will be outputted (one row for each variation, with the same UPRN repeated more than once potentially). It may be wise to also return the ‘logical status’ and/or ‘postal address flag’ values against each to enable further filtering (that is, to include or exclude historical addresses, for example or to restrict the results to postal addresses only).

9.5 Supporting case-insensitive queries and partial matches

A flaw in the above examples is the use of equality operators. In practice, because people do not tend to be consistent with capitalisation of letters, the SQL ‘LIKE’ operator might work better, and depending on the nature of the application, a ‘%’ wildcard could be appended to the end of each search term to allow only the first few letters of an address component to be entered, for example.

```
dp.post_town LIKE townsearchtext      -- Case insensitive search in some databases
dp.post_town LIKE (townsearchtext || '%') -- Matches post towns that start with the search text
dp.post_town LIKE ('%' || townsearchtext || '%') -- Matches post towns that contain the search text
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Alternatively, if exact matches are required but case sensitivity is not, then the UPPER() or LOWER() SQL functions can be used on each side of the equals sign in comparisons (a solution that should work in all databases):

```
UPPER(dp.post_town) = UPPER(townsearchtext) -- Case insensitive equality
```

Finally, to combine all of the approaches, the following would work for maximum flexibility:

```
UPPER(dp.post_town) LIKE ('%' || UPPER(townsearchtext) || '%')
```

9.6 Generating a search query from unstructured user input

When offering a ‘search engine’ style search feature, with just a single text box to enter search terms, a wholly different approach is required. No assumptions can be made about the order, format or style of the user input, and the data will need to be ‘indexed’ in a way that facilitates searches of this type.

9.7 Creating a ‘Search Index’ for addresses

Search engine style searches are likely to require the creation of an additional index/lookup table for addresses. Such a table is likely to consist of just two main columns: a key value (UPRN) and a formatted address string. Additional columns may be required to allow filtering of results (such as the ‘logical status’ values, which would allow the results to be filtered on ‘approved’, ‘provisional’ and ‘historical’ statuses, for example).

The following table shows a possible ‘address index’ table structure:

UPRN	Address Text	Statuses (multiple fields)
123456789012	4 THE MEADOWS HIGH STREET WALTHAMSDALE BURRIDGE BU27 9UB	Approved
123456789012	FLAT 4 THE MEADOWS HIGH STREET WALTHAMSDALE BURRIDGE BU27 9UB	Alternative + PAF
123456789012	4 HIGH STREET WALTHAMSDALE CLOSE BURRIDGE BU27 9UB	Historical
947364758903	ROSE COTTAGE MAIN STREET HAVERSHAM SUDBURY SU45 9TY	Approved + PAF
947364758903	ROSE FARMHOUSE MAIN STREET HAVERSHAM SUDBURY	Historical

Note how the addresses have been formatted as a single text string with a single space between each word (although leaving commas in would do no harm). All forms of each address (both PAF and geographic, current and historical, approved and alternative) have been added to the index, so there can be several rows with the same UPRN. To speed up complex searching, an appropriate index could be added to the Address Text field, such as a full text search index.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

9.8 Structuring the query for an unstructured address search

Once a suitable search index is in place, the query itself can be put together. The basic idea is to split the user input into search terms by removing commas, double spaces and other unnecessary whitespace and then splitting it at each single space, as follows:

User Input: 4, High Street, westville, wv17

Capitalised, with commas and double spaces removed:

4 HIGH STREET WESTVILLE WV17

Split into separate search terms:

- 4
- HIGH
- STREET
- WESTVILLE
- WV17

Once the user input has been pre-processed into separate search terms, a query can be generated. The key assumption in this example will be that ALL search terms must be matched against the index table to be considered as a result; this implies a query where each value is matched using an 'AND' operator. In order to search the whole index, the 'LIKE' operator will need to be used along with a '%' wildcard on either side of the search text. A suitable search query for the above example would be as follows:

```
SELECT UPRN, AddressText FROM AddressSearchIndex
WHERE
AddressText LIKE '%4%' AND
AddressText LIKE '%HIGH%' AND
AddressText LIKE '%STREET%' AND
AddressText LIKE '%WESTVILLE%' AND
AddressText LIKE '%WV17%';
```


Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

This query would return all rows from the index table that contain all of the search terms, along with the appropriate UPRNs. The following table shows how the index table would be used in the above example to return relevant results:

UPRN	Address text	Statuses (multiple fields)
894756389092	4 HIGH STREET WESTVILLE SUNNYTOWN WV17 7HL	Approved + PAF
894756389092	ROSE COTTAGE 4 HIGH STREET WESTVILLE SUNNYTOWN WV17 7HL	Alternative
894756389092	ROSE COTTAGE HIGH STREET WESTVILLE SUNNYTOWN WV17 7HL	Alternative
274859037849	FLAT 4 Highbury Court High Street Westville Sunnytown WV17 7HL	Approved + PAF
482974769830	MAPS4U LTD HIGH STREET WESTVILLE SUNNYTOWN WV17 7HL	Approved

This result set can then be presented to the user, who can then select the most appropriate record (which can then be retrieved in full using the UPRN).

Of course, in a practical implementation, the above query would need to be dynamically generated, with a separate condition added for each search term. This example is quite a strict search query that requires all search terms to be present; many layers of complexity could be added to allow partial and ‘fuzzy’ matches, and to return confidence scores, for example, but such enhancements are beyond the scope of this guide.

9.9 Summary

This guide was intended as an introduction to implementing address search functionality using AddressBase Premium. The following is a summary of the main points:

- A user front-end for an address search may contain a single, search-engine style text box, or multiple text boxes representing different parts of an address.
- A typical address search function takes place in three stages: 1) a user enters search text 2); a query is run, returning a set of possible matches; and 3) the user selects the address of interest and the full record is then returned.
- With a structured search interface, the addresses can be queried directly by mapping the various address fields to the text boxes supplied.
- For an unstructured (single text box) interface, it is necessary to create an index table with fully formatted address strings against each UPRN. Queries can then be run against this index table by splitting the user input into individual search terms and requiring them all to be present.
- It is possible to filter results by status (‘approved’, ‘alternative’ and ‘historical’, as well as ‘postal’ or ‘non-postal’, and so on...).
- Any search function should search all forms of an address (both geographic and Delivery Point Addresses, including provisional and historical variations).
- Careful consideration should be given to the use of ‘fuzzy’ search algorithms used (for example using wildcard or sound-alike searches).

10 ADDRESSBASE PREMIUM COU IMPLEMENTATION GUIDANCE

10.1 Introduction

All of the AddressBase products are available as a Full Supply or a Change Only Update. A Change Only update means you will only be supplied with the features which have changed since your last supply. The following sections provide guidance on how you could potentially manage a COU supply of AddressBase Premium data.

Please note: if you receive a tile supply, you will receive Change Chunks. This means if a record within your tile has changed all of the records in that tile will be provided to you as inserts, and no updates or deletes will be issued.

10.2 Background

AddressBase Premium is a complex relational dataset that is being used by a variety of customers who are using a variety of methods and software to manage the data. Some of the software solutions take a considerable length of time to load and manage the data, and, therefore, COU is being seen as a simple and effective way to keep data holdings up-to-date without spending considerable time loading and managing a full supply every time the data is refreshed.

10.3 Types of change

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

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

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10.4 High-level COU implementation model

The table below illustrates how to implement the AddressBase Premium COU within a database.

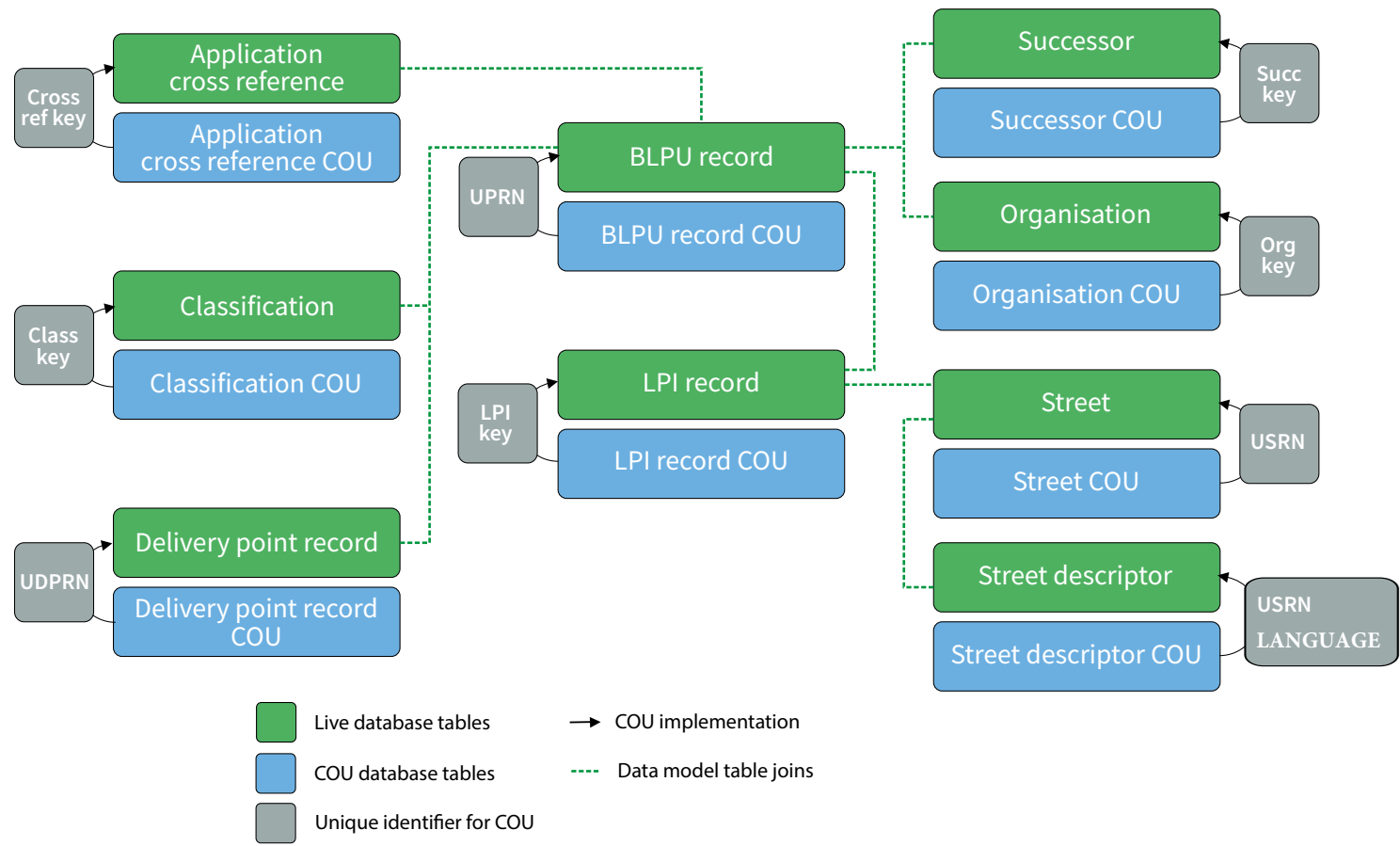


Figure 7: High-level COU implementation model

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10.5 High-level COU implementation model – with archiving

Before COU is applied, there may be a business requirement to archive existing address records. The table below illustrates how to implement the AddressBase Premium COU within a database.

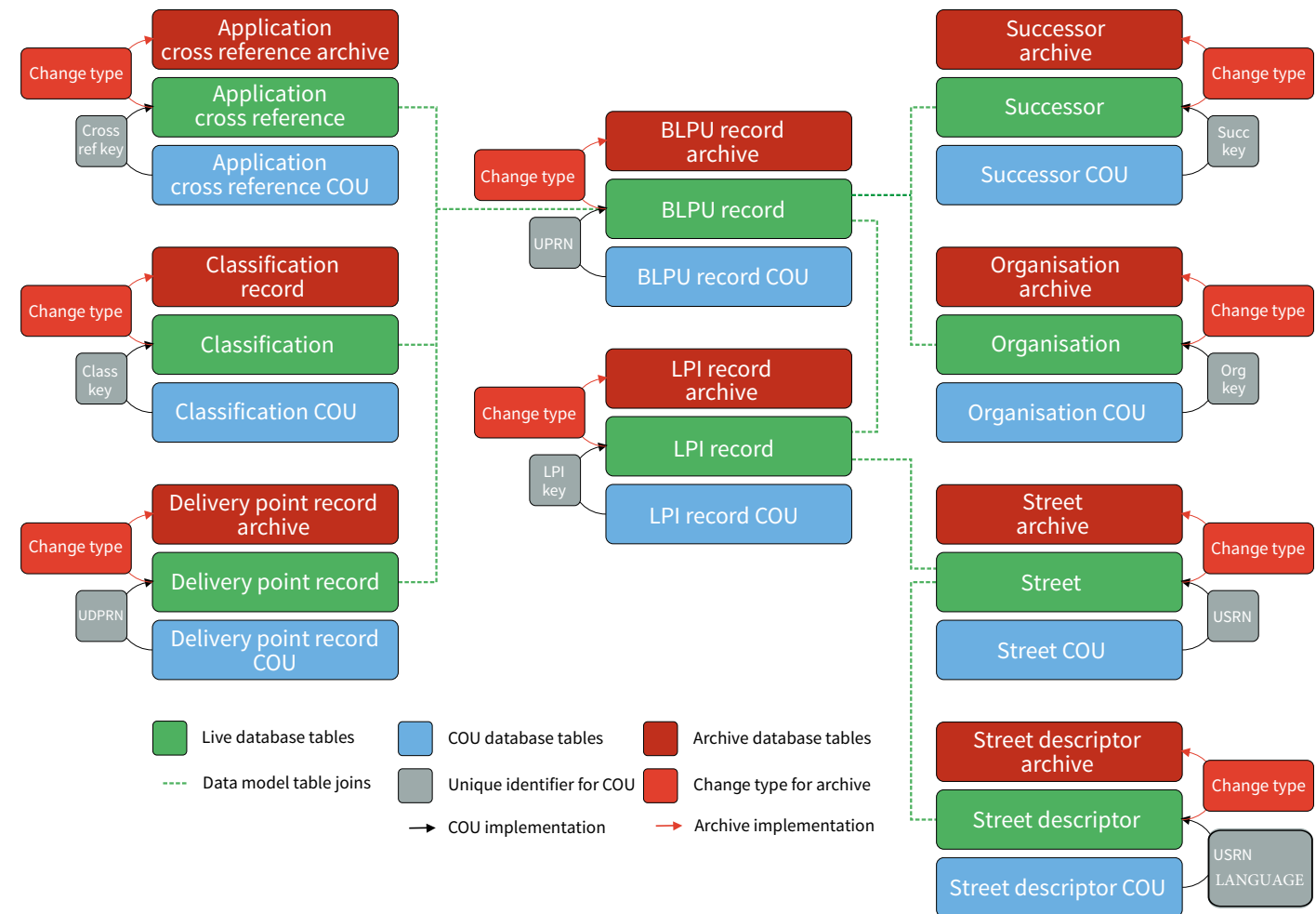


Figure 8: High-level COU implementation model on how to create archive tables and apply COU

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10.6 Applying COU to tables

10.6.1 Changes to BLPU record

Within the BLPU table there will not be any 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 abp_blpu
GROUP BY uprn
HAVING ( COUNT(uprn) > 1 );
```

This query should return 0 rows and this confirms there are no duplicates.

As there are no duplicate records we can therefore use the UPRN to apply the COU.

Once confirmed, the following steps can be taken to apply the COU (without archiving):

#Initially delete the existing records that will be updated and deleted.

```
DELETE FROM abp_blpu WHERE uprn IN (SELECT distinct uprn FROM abp_blpu_cou WHERE change_type
!= 'I');
```

#Insert the new updated records and the new inserted records.

```
INSERT INTO abp_blpu SELECT * FROM abp_blpu_cou WHERE change_type != 'D';
```

Some of the COU records that are change type 'U' (updates) may change the Logical Status Code from '1' to '8', meaning that this address has become 'Historical'. This means that the BLPU table intrinsically archives historical record.

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 and populate it with records that are being Updated and Deleted from the live BLPU table.

#The following command creates an archive table of the records that are being updated and deleted from the existing BLPU table.

#If this table already exists you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_blpu_archive AS SELECT * FROM abp_blpu WHERE uprn IN (SELECT distinct uprn
FROM abp_blpu_cou WHERE change_type != 'I');
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

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

```
DELETE FROM abp_blpu WHERE uprn IN (SELECT distinct uprn FROM abp_blpu_cou WHERE change_type != 'I');
```

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

```
INSERT INTO abp_blpu SELECT * FROM abp_blpu_cou WHERE change_type != 'D';
```

10.6.2 Changes to Classification table

Because there is a one-to-many relationship between the BLPU table and the Classification table, there can be records in the Classification table that share a UPRN. To apply COU to the correct record, users should use the Class_Key to ensure that the correct classification record is updated.

Figure 9: this example illustrates a scenario when a user would need to choose between two classification records that have the same UPRN. In this case, the Class_Key has been used to apply the COU to 'Record 2'.

Classification	Record 1	Record 2	Classification	COU record	Classification	Updated record	Record 2
Record identifier	32	32	Record identifier	32	Record identifier	32	32
Change type	I	I	Change type	U	Change type	U	I
Pro order	706838	706839	Pro order	331481	Pro order	331481	706839
UPRN	116000665	116000665	UPRN	116000665	UPRN	116000665	116000665
Class key	9055C000081107	9055C000001834	Class key	9055C000081107	Class key	9055C000081107	9055C000001834
Classification code	U	R	Classification code	CL10RE	Classification code	CL10RE	R
Class scheme	AddressBase Premium classification scheme	AddressBase Premium classification scheme	Class scheme	AddressBase Premium classification scheme	Class scheme	AddressBase Premium classification scheme	AddressBase Premium classification scheme
Scheme version	1.0.0	1.0.0	Scheme version	1.0.0	Scheme version	1.0.0	1.0.0
Start date	2011-12-01	2010-03-16	Start date	2011-12-01	Start date	2011-12-01	2010-03-16
End date	N/A	N/A	End date	N/A	End date	N/A	N/A
Last update date	2011-12-01	2010-08-12	Last update date	2013-05-04	Last update date	2013-05-04	2010-08-12
Entry date	2011-12-01	2010-03-16	Entry date	2011-12-01	Entry date	2011-12-01	2010-03-16

To achieve this outcome (without archiving the 'old' record 2), we can use the following SQL commands to apply the COU:

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

#Initially delete the existing records that are being updated and deleted.

```
DELETE FROM abp_classification WHERE class_key IN (SELECT distinct class_key FROM abp_classification_cou WHERE change_type != 'I');
```

#Insert the new update records and the new insert records.

```
INSERT INTO abp_classification SELECT * FROM abp_classification_cou WHERE change_type != 'D';
```

One thing you may want to consider is keeping an archive of the updated and deleted classification records. For example, this might be useful to understand when an address has changed use from residential to commercial.

To achieve this outcome for change types 'U' or 'D' (with archiving) we can use the following SQL commands to apply the COU:

#The following command creates an archive table of the records that are being updated and deleted from the existing Classification table. If this table already exists, you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_classification_archive AS SELECT * FROM abp_classification WHERE class_key IN (SELECT distinct class_key FROM abp_classification_cou WHERE change_type != 'I');
```

#The following command then deletes the records from the existing table that are either updates or deletions.

```
DELETE FROM abp_classification WHERE class_key IN (SELECT distinct class_key FROM aabp_classification_cou WHERE change_type != 'I');
```

#The following command then inserts the new insert records and the new updated records into the Classification table.

```
INSERT INTO abp_classification SELECT * FROM abp_classification_cou WHERE change_type != 'D';
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

Figure 10

Classification	Archive record
Record identifier	32
Change type	I
Pro order	706838
UPRN	116000665
Class key	9055C000081107
Classification code	CL10RE
Class scheme	AddressBase Premium classification scheme
Scheme version	1.0.0
Start date	2011-12-01
End date	N/A
Last update date	2011-12-01
Entry date	2011-12-01

One thing to note, when the update or deleted records are moved into an archive table, the end date may not always be populated as seen in Figure 4. If this is the case, users may wish to consider adding an end_date (which could be based on the epoch date that it was archived) as shown in Figure 5. This will enable querying for a particular timeframe.

Figure 11

Classification	Archive record
Record identifier	32
Change type	I
Pro order	706838
UPRN	116000665
Class key	9055C000081107
Classification code	CL10RE
Class scheme	AddressBase Premium classification scheme
Scheme version	1.0.0
Start date	2011-12-01
End date	2013-05-04
Last update date	2011-12-01
Entry date	2011-12-01

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10.6.3 Changes to the Organisation table

Because there is a one-to-many relationship between the BLPU table and the Organisation table, there can be records in the Organisation table that share a UPRN. To apply COU to the correct, record users should use the Org_Key to ensure that the correct classification record is updated.

To apply COU to the Organisation table (without archiving), the following code can be used:

#Initially delete the existing records that will be updated and deleted.

```
DELETE FROM abp_organisation WHERE org_key IN (SELECT distinct org_key FROM abp_organisation_cou WHERE change_type != 'I');
```

#Insert the new updated records and the new inserted records.

```
INSERT INTO abp_organisation SELECT * FROM abp_organisation_cou WHERE change_type != 'D';
```

As with the Classification table, the changes in Organisation name may be useful to keep as archives allowing a business to find previous organisations and understand when those may have changed.

To apply COU to the Organisation table (with archiving), the following code can be used:

#The following command creates an archive table of the records that are being updated and deleted from the existing Organisation table. If this table already exists you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_organisation_archive AS SELECT * FROM abp_organisation WHERE org_key IN (SELECT distinct org_key FROM abp_organisation_cou WHERE change_type != 'I');
```

#The following command then deletes the records from the existing table that are either updates or deletions.

```
DELETE FROM abp_organisation WHERE org_key IN (SELECT distinct org_key FROM aabp_organisation_cou WHERE change_type != 'I');
```

#The following command then inserts the new insert records and the new updated records into the Organisation table.

```
INSERT INTO abp_organisation SELECT * FROM abp_organisation_cou WHERE change_type != 'D';
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10.6.4 Changes to the Delivery Point Address table

Within the Delivery Point Address table there will not be any records with the same UDPRN. This can be tested by checking the number of records that have the same UDPRN. The following SQL code would notify you of any duplicates.

```
SELECT rm_udprn, COUNT(udprn) AS NumOccurrences
FROM abp_delivery_point
GROUP BY udprn
HAVING ( COUNT(udprn) > 1 );
```

This query should return 0 rows and this confirms there are no duplicates.

As there are no duplicate records, we can therefore use the UDPRN to apply the COU.

To apply COU to the Delivery Point Address table (without archiving), the following code can be used:

#Initially delete the existing records that will be updated and deleted.

```
DELETE FROM abp_delivery_point WHERE udprn IN (SELECT distinct udprn FROM abp_delivery_point_cou
WHERE change_type != 'I');
```

#Insert the new updated records and the new inserted records.

```
INSERT INTO abp_delivery_point SELECT * FROM abp_delivery_point_cou WHERE change_type != 'D';
```

The Delivery Point Address table does not have the ability to hold historical records, as it is the current view of the Royal Mail Delivery Point Address File (PAF). Therefore, in order to capture the historical records, you will need to create an archive table that is populated when records are either deleted or updated. The following code will create the archive records:

To apply COU to the Delivery Point Address table (with archiving), the following code can be used:

#The following command creates an archive table of the records that are being updated and deleted from the existing Delivery Point Address table. If this table already exists, you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_delivery_point_archive AS SELECT * FROM abp_delivery_point WHERE udprn IN
(SELECT distinct udprn FROM abp_delivery_point_cou WHERE change_type != 'I');
```

#The following command then deletes the records from the existing table that are either updates or deletions.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

```
DELETE FROM abp_delivery_point WHERE udprn IN (SELECT distinct udprn FROM abp_delivery_point_cou
WHERE change_type != 'I');
```

#The following command then inserts the new insert records and the new updated records into the Delivery Point Address table.

```
INSERT INTO abp_delivery_point SELECT * FROM abp_delivery_point_cou WHERE change_type != 'D';
```

10.6.5 Changes to LPI table

Because there is a one-to-many relationship between the BLPU table and the LPI table there can be records in the LPI table that share a UPRN. To apply COU to the correct record, users should use the LPI_Key to ensure that the correct classification record is updated.

To apply COU to the LPI table (without archiving), the following code can be used:

#Initially delete the existing records that will be updated and deleted.

```
DELETE FROM abp_lpi WHERE lpi_key IN (SELECT distinct lpi_key FROM abp_lpi_cou WHERE change_type != 'I');
```

#Insert the new updated records and the new inserted records.

```
INSERT INTO abp_lpi SELECT * FROM abp_lpi_cou WHERE change_type != 'D';
```

As with the BLPU table, some of the COU records that are change type 'U' (updates) may change the Logical Status Code from '1' to '8', meaning that this address has become 'historical'. This means that the LPI table intrinsically archives the historical record.

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 and populate it with records that are being updated and deleted from the live LPI table.

To apply COU to the Street table (with archiving) the following code can be used:

#The following command creates an archive table of the records that are being updated and deleted from the existing LPI table. If this table already exists, you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_lpi_archive AS SELECT * FROM abp_lpi WHERE lpi_key IN (SELECT distinct lpi_key FROM abp_lpi_cou WHERE change_type != 'I');
```

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

```
DELETE FROM abp_lpi WHERE lpi_key IN (SELECT distinct lpi_key FROM abp_lpi_cou WHERE change_type != 'I');
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

#The following command then inserts the new insert records and the new updated records into the LPI table.

```
INSERT INTO abp_lpi SELECT * FROM abp_lpi_cou WHERE change_type != 'D';
```

Figure 12: shows an original LPI record next to a COU record. In this example, the record is being made historical (logical status code: 8) and therefore has a populated end date attribute.

LPI	Record	COU Record
Record identifier	24	24
Change type	I	U
Pro order	478857	478857
UPRN	100000527208	100000527208
LPI key	4520L000005174	4520L000005174
Language	ENG	ENG
Logical status	1	8
Start date	'2001-03-23'	'2001-03-23'
End date		'2013-04-24'
Last update date	'2010-05-21'	'2013-04-24'
Entry date	'2001-03-23'	'2001-03-23'
SAO start number		
SAO start suffix		
SAO end number		
SAO end suffix		
SAO text		
PAO start number		
PAO start suffix		
PAO end number		
PAO end suffix		
PAO text	'SITE OF FORMER MISER NETHAULERS'	'FORMER SITE OF MISER NETHAULERS'
USRN	36815950	36815950
USRN match indicator	1	1
Area name		
Level		
Official flag		

10.6.6 Changes to Street table

Within the Street table there will not be any records with the same USRN. This can be tested by checking the number of records that have the same USRN. The following SQL code would notify you of any duplicates.

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

```
SELECT usrn, COUNT(usrn) AS NumOccurrences
FROM abp_street
GROUP BY usrn
HAVING ( COUNT(usrn) > 1 );
```

This query should return 0 rows and this confirms there are no duplicates.

As there are no duplicate records, we can, therefore, use the USRN to apply the COU.

To apply COU to the Street table (without archiving), the following code can be used:

#Initially delete the existing records that will be updated and deleted.

```
DELETE FROM abp_street WHERE usrn IN (SELECT distinct usrn FROM abp_street_cou WHERE change_type != 'I');
```

#Insert the new updated records and the new inserted records.

```
INSERT INTO abp_street SELECT * FROM abp_street_cou WHERE change_type != 'D';
```

The Street table does not have the ability to hold historical records, as it does not have a Logical Status Code attribute. Therefore, in order to capture the historical records, you will need to create an archive table that is populated when records are either deleted or updated.

To apply COU to the Street table (with archiving), the following code can be used:

#The following command creates an archive table of the records that are being updated and deleted from the existing Street table. If this table already exists, you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_street_archive AS SELECT * FROM abp_street WHERE usrn IN (SELECT distinct usrn FROM abp_street_cou WHERE change_type != 'I');
```

#The following command then deletes the records from the existing table that are either updates or deletions.

```
DELETE FROM abp_street WHERE usrn IN (SELECT distinct usrn FROM abp_street_cou WHERE change_type != 'I');
```

#The following command then inserts the new insert records and the new updated records into the Street table.

```
INSERT INTO abp_street SELECT * FROM abp_street_cou WHERE change_type != 'D';
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

10.6.7 Changes to Street Descriptor table

Within the Street Descriptor table, there will not be any records with the same USRN and the same language. This is called a compound key, rather than having a single column as a Primary Key. This can be tested by checking the number of records that have the same USRN. The following SQL code would notify you of any duplicates.

```
SELECT usrn, language, COUNT(usrn) AS NumOccurrences
FROM abp_street_descriptor
GROUP BY usrn, language
HAVING ( COUNT(usrn) > 1 );
```

This query should return 0 rows and this confirms there are no duplicates using the compound key.

As there are no duplicate records, we can therefore use the USRN and LANGUAGE to apply the COU.

To apply COU to the LPI table (without archiving) the following code can be used:

#Initially delete the existing records that will be updated and deleted.

```
DELETE FROM abp_street_descriptor WHERE EXISTS (SELECT 1 FROM abp_street_descriptor_cou
WHERE abp_street_descriptor_.usrn = abp_street_descriptor.usrn
AND abp_street_descriptor_.language = abp_street_descriptor.language
AND abp_street_descriptor_.change_type != 'I')
```

#Insert the new updated records and the new inserted records.

```
INSERT INTO abp_street_descriptor SELECT * FROM abp_street_descriptor_cou WHERE change_type !=
'D';
```

The Street Descriptor table does not have the ability to hold historical records, as it does not have a Logical Status Code attribute. Therefore, in order to capture the historical records, you will need to create an archive table that is populated when records are either deleted or updated.

To apply COU to the Street Descriptor table (with archiving) the following code can be used:

#The following command creates an archive table of the records that are being updated and deleted from the existing Street table. If this table already exists you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE abp_street_descriptor_archive AS SELECT * FROM abp_street_descriptor
WHERE EXISTS (SELECT 1 FROM abp_street_descriptor_cou
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

WHERE abp_street_descriptor.usrn = abp_street_descriptor.usrn

AND abp_street_descriptor.language = abp_street_descriptor.language
AND abp_street_descriptor.change_type != 'I')

#The following command then deletes the records from the existing table that are either updates or deletions.

```
DELETE FROM abp_street_descriptor WHERE usrn IN (SELECT distinct usrn FROM abp_street_descriptor_cou WHERE change_type != 'I');
```

#The following command then inserts the new insert records and the new updated records into the Street table.

```
INSERT INTO abp_street_descriptor SELECT * FROM abp_street_descriptor_cou WHERE change_type != 'D';
```

10.6.8 Changes to the Cross Reference table

Within the Cross Reference table there will not be any records with the same XREF_KEY. This can be tested by checking the number of records that have the same XREF_KEY. The following SQL code would notify you of any duplicates.

```
SELECT XREF_KEY, COUNT(XREF_KEY) AS NumOccurences
FROM ABP_XREF
GROUP BY XREF_KEY
HAVING (COUNT(XREF_KEY) > 1);
```

The query above should return 0 rows and therefore confirm there are no duplicates.

As there are no duplicates we can therefore use the XREF_KEY to apply the COU.

To apply the COU to the Cross Reference Table (without archiving), the following code can be used:

Initially delete the existing records that will be updated and deleted.

```
DELETE FROM ABP_XREF WHERE XREF_KEY IN (SELECT distinct XREF_KEY FROM ABP_XREF_COU WHERE CHANGE_TYPE != 'I');
```

Insert the new records and the updated records.

```
INSERT INTO ABP_XREF SELECT * FROM ABP_XREF_COU WHERE CHANGE_TYPE != 'D';
```

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89

The Cross Reference table does not have the ability to hold historical records, as it does not have a logical status code attribute. Therefore in order to capture the historical records, you will need to create an archive table which is populated when records are either deleted or updated.

To apply COU to the Cross Reference table (with archiving) the following code can be used:

The following command creates an archive table of records which are being updated and deleted from the existing Cross Reference table. If this table already exists, you can simply use INSERT INTO rather than CREATE TABLE.

```
CREATE TABLE ABP_XREF_ARCHIVE AS SELECT * FROM ABP_REF WHERE XREF_KEY IN (SELECT DISTINCT XREF_KEY FROM ABP_XREF_COU WHERE CHANGE_TYPE != 'I');
```

The following command then deletes the records from the existing table that are either updates or deletes.

```
DELETE FROM ABP_XREF WHERE XREF_KEY IN (SELECT DISTINCT XREF_KEY FROM ABP_XREF_COU WHERE CHANGE_TYPE != 'I');
```

The following command then inserts the new insert records and the updated records.

```
INSERT INTO ABP_XREF SELECT * FROM ABP_XREF_COU WHERE CHANGE_TYPE != 'D';
```


FURTHER INFORMATION

AddressBase products help and support pages:

<http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/products/addressbase-premium.html>

<http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/products/addressbase-plus.html>

<http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/products/addressbase.html>

Preface	2
1 AddressBase data applications	3
2 What do I need to use this data?	4
3 What is on the CD/DVD or in the data download?	5
4 Managing the CSV data	10
5 How do I load the CSV AddressBase products into a GIS?	15
6 Importing AddressBase products into a database	24
7 How do I load the GML data?	43
8 How do I create a single-line or multi-line address?	44
9 Searching for addresses using AddressBase Premium	64
10 AddressBase Premium COU implementation guidance	74
Further information	89



Customer Service Centre, Ordnance Survey,
Adanac Drive, Southampton, United Kingdom, SO16 0AS

+44 (0)3456 050505 (General enquiries)
+44 (0)3456 050504 (Welsh helpline)
+44 (0)2380 056146 (Textphone)

customerservices@os.uk
www.os.uk

© Crown copyright and/or database right 2016 OS

D08911 0216