PAF - Support and Update Process

# Executive Summary

Crown Commercial Service needs to be able to identify buyers’ buildings to provide accurate costs for the facilities management marketplace (FM) services. To accommodate this the team developing the FM service have installed a postcode look up facility provided by entering the buyer’s building postcode, much as many other on-line services do.

The most accurate, up-to-date UK address database providing this facility is ‘The Postcode Address File®, or PAF’ from the Post Office, which puts the latest, most accurate UK address data at our disposal. It provides accurate UK address data, is constantly updated and can be incorporated into our systems

Britain’s towns and cities are constantly growing and evolving; business names change, single residences become apartments, new properties are built and with more than 3,000 addresses change each week. The CCS FM address database needs to keep up to date or otherwise the on-line business could look inefficient.

PAF - the Postcode Address File – gives CCS access to 1.8 million UK postcodes and over 30 million residential and business addresses. These are constantly updated and verified by ninety thousand postmen and women, making updates to 3,500 records each day. In a fast-changing business landscape, it is a reliable address data service that CCS can rely on.

### Purpose of the document

The purpose of this document is to outline how this data is used and the arrangements for a regular download of the data files required.

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# The datasets involved

The data within the FM application comprises:

OS Address data

ONS Region data

Eurostat Postcode – Region correspondence data

OS Address data is used during the application process of the end-user, when adding their buildings for which they want services.

The postcode of these buildings is used, via the correspondence data, to determine the NUT3 regions the building reside in. These NUTS3 regions are then used to determine which suppliers supply services available to those buildings.

## NUTS3 Regions

We use NUTS2 and NUT3 Region codes and names, from the ONS Open Geography Portal:

[All Eurostat names and codes](https://geoportal.statistics.gov.uk/search?collection=Dataset&sort=name&tags=all(NAC_EUR))

[Eurostat NUTS names and codes](https://geoportal.statistics.gov.uk/search?collection=Dataset&sort=name&tags=all(NAC_NUTS3))

This data has been manually extracted from the source website and added to 2 sets of data across 4 files:

/data/facilities\_management/regions.csv

/data/nuts<n>\_regions.csv

The first file contains NUTS3 region codes and names with embellished information, making them informal (not correct) region names. These were used during the prototype development.

The other 3 files contain the full hierarchy of NUTS regions in the UK with fully correct names. It is this data which is used in the application.

NUTS regions are used in the FM product in the following way:

NUTS2 is used to map suppliers to regions in England

NUTS3 is used to map suppliers to regions in Wales, Scotland and Northern Ireland

### Importing Region Data

This data is added to the application via 2 components of rake db:static.

Function csv\_to\_fm\_regions is used to import regions.csv to table fm\_regions. It is part of the original formulation of the prototype sites and is loaded within load\_fm\_static\_data. It is largely redundant in the production site.

The more detailed and in-use data is imported via load\_fm\_nuts\_data. This function will take each of the CSV files mentioned above and create, within table nuts\_regions, the full hierarchy of UK NUTS regions with their formal names.

No changes are required to these regions until a change in the NUTS3 codes are changed.

## Postcode to NUT3 correspondence

As stated, these regions need to be mapped to the postcodes of the client’s buildings. This is achieved by using data from the POSTCODES AND NUTS page on the Eurostat website:

<https://ec.europa.eu/eurostat/web/nuts/correspondence-tables/postcodes-and-nuts>

The source data can be found in several files in the /data/facilities\_management folder in the crown-commercial repo.

|  |  |
| --- | --- |
| File | Purpose |
| pc\_uk\_NUTS-2013\_vFM-CAT.csv | The 2013 data, massaged by the category.  This data is imported into the system from 4 files in the /data/facilities\_management/pc\_uk\_NUTS folder, files NUTS\_1 to \_4.csv. |
| pc\_uk\_NUTS-2013\_v2.txt | This is the original data for 2013. These correspondences, and by inference, the region codes are all aged at the time of production. This is because the suppliers, when invited into the framework, were mapped by the 2015 regions. |
| pc2018\_uk\_NUTS-2016\_v3.0.zip | This file contains the latest data (2018-2016) mappings – Northern Ireland and Scottish data is problematic in this dataset as these codes and region names have changed considerably from the 2013 dataset. Use of this data will require mapping region codes. |

This data goes into the postcode\_nuts\_regions table. The target result is for this table to be a merged dataset of the two different periods of data. There are 100,000 postcodes in the new data that are not present in the old data.

**IMPORTANT**

Firstly, the data in the existing correspondence data contains NUTS2 and NUTS3 codes.

This means that the supplier on-boarding mapped suppliers to NUTS2 and NUTS3 codes.

So, for example, there are no postcodes mapped to any NUTS3 region in NUTS2 region UKG3 (East Midlands), this means all suppliers are mapped at the NUTS2 level. Any new postcode imported must be mapped from any NUTS3 (UKG3<n>) code to the NUTS2 equivalent for England NUTS regions only. Other nations will need to be mapped at the NUTS3 level.

So, any import of postcode data, and subsequent production of mapping data must map to existing NUTS3 code or NUTS2 codes as already defined in the existing dataset.

See Supporting Code for SQL to determine these differences and ensure all new mappings resolve to existing data at the existing level. There are 247,000 postcodes mapped to NUTS3 regions and 1,144,600 mapped to NUTS2 codes.

The latest data, 2016 – is mapped to changed NUTS3 codes – the NUTS3 codes are different for Northern Ireland and Scotland.

If any import of new data is to be conducted, all the target NUTS3 codes of the new data need to be pointed to the old NUTS3 codes for Wales, Scotland and N.I and the old NUTS2 codes for England. This is described in the appendices. The data constructed (found in NUT3\_5 data file) is built using this mapping, and as with the other NUTS3\_<n> files, should not be changed. The data in the appendices indicates the NUTS3 regions and the NUTS3 codes that are changed.

Supporting code, Postgres SQL/Functions to support this mapping process are included in the appendices.

### Importing Correspondence data

There are 2 tasks used to do this. The first is to operate as a Sidekiq task, the other performs the operation directly.

There are many rows to import, the Sidekiq task is used to perform the operation on the remote server, the other is to do the task locally and immediately.

To perform the task immediately, execute the following code:

bundle exec rake:update\_postcodes\_to\_nuts\_now

This will start at the highest numbered file and will upsert each row into the postcodes\_nuts\_regions table.

To perform the task as a background process, execute the following:

Bundle exec rake:run\_postcodes\_to\_nuts\_worker

This will start a sidekiq process that will use FacilitiesManagement::PostcodesToNutsWorker to conduct the operation. It will go through each file and directly insert any data – this may lead to duplicates in the table.

## PAF/OS Address Data

This data is sourced from the Data Services of the Ordnance Survey. This data is the root of the Post Office PAF data.

Pretty much everything is recorded in this data and it is very large.

In the long-term – it is best that this process be automated.

In outline however, the process is to log into the OS address site, download 3 sets of data and import these into the os-address table in the database.

We are not currently using the Post Office services or API’s. We use the root data however, which is not sourced from the Post Office.

The method is described in Appendix A.

The CSV file is free to CCS because a licence is held already but will need regularly updating. The approach adopted by the Digital Foundation team has been to utilise a CSV file for download. Optimum is a 6 weekly regular download.

It is expected that Technical Operations will take forward this activity once in live service with support, initially, from the Digital Foundation team.

### Importing Postcode data

A folder in AWS stores the raw postcode data and also the originating data files take from the OS site.

This data is imported from AWS via 3 tasks:

bundle exec rake db:postcode.

Or

bundle exec rake update\_postcode

This command will use the updatePostcodeFiles folder in Amazon.

and

bundle exec rake db:local\_postcode -- --f /Users/<you>/ABFLGB\_CSV/<chunked data folder>.

The first task will use the AWS folder to obtain data and will create any tables, indices and views for postcode data and postcode lookup if required. The tasks to do the latter will not overwrite indices, views and tables that are already present.

The second task will update the OS address data – it will not try to create tables and views. The source of the data in this task is the updatePostcodeFiles folder in Amazon. When receiving updates, the data needs to be chunked and filtered for unchanged rows and saved as CSV data in this folder.

Chunked DAT and CSV files are processed differently in the import process.

DAT files are injected into the DB using Postgres’s COPY command. It will create duplicates. They can therefore not be used except when creating a new installation or if the os\_address table has been emptied (TRUNCATE). The COPY command is very fast, and all 38mil rows can be inserted into the DB in an hour or so.

CSV files, as created by the chunking shell-script, are tested line-by-line against values in the DB – the code will deduplicate and ensure the latest version of the uprn is in the DB. This is very slow process which is why the CSV files, when added to the updatePostcodeFiles folder need to be filtered of any unchanged rows. This is not mandatory, but it will take 8-10 hours to complete the job without it.

It is a lengthy process and has been embellished in the following ways:

Support to process files from a local source is included in task rake db:local\_postcode

Support to process zipped as well as uncompressed files from AWS and locally. The data is very large and it will be quicker for dev’s to bring the data locally to run the tasks. The original data size is approximately 17Gb, the zipped data is 3.6Gb.

The task will ensure there are no duplicates of data in the os\_address table if CSV files are supplied

The task will only update data if there has been a change to that data – each row in the data includes an update date that will be compared with the date we have in the os\_address table

These changes will make the process more adaptable and more efficient.

The method and process to do this is shown in appendix A.

# APPENDIX A – Postcode data process

## Data Preparation

### Download the files

You will have a folder named ABFLGB\_CSV.

The contents of this should be uploaded to [https://console.aws.amazon.com/s3/buckets/ccs.414753715227.postcode-data/AddressBasePlus<yyyy><mm](https://console.aws.amazon.com/s3/buckets/ccs.414753715227.postcode-data/AddressBasePlus%3cyyyy%3e%3cmm)>.

These files are large, it is likely that your session in the browser, to AWS will time-out – you must keep watching and moving around the console so as the session remains active. You can also use CyberDuck – which is a great benefit for the large number files.

Previously packaged data can be kept but this is not essential.

Otherwise drop contents of the download into the *AddressBasePlus* folder, overwriting what is already there.

### Data Preparation

Each file in the data set is very large and to best manage import into the application, they will need chunking.

This is best done with a combination of awk and Excel. Better though is the shell-script found in Chunking Postcodes. This file is included in the /data/postcode folder.

Embedded commas in the quoted strings in the source data will confuse AWK, which is why Excel is used. If you install [csvquote](https://github.com/dbro/csvquote) from github, you can use the included chunk\_postcodes.sh script shown in Chunking Postcodes. This will produce output of the form dataPostcode\_yyyy\_mm\_dd\_xx.csv that can be uploaded to the server

Follow the instructions in Obtaining Source Data to download the postcode data locally.

Awk will process the CSV files in its normal manner, however, there are 500,000+ lines where the address details contain embedded commas. Excel is used to convert that output file to a tab-separated file, and awk is used again to process that file and append data to the previously created files.

The source files have the following naming convention:

AddressBasePlus\_FULL\_yyyy-mm-dd\_nnn.csv.

The output of the first awk command will produce files in this convention:

dataPostcode\_yyyy-mm-dd-ZZ.csv

Where ‘ZZ’ indicates the Postcode area (see Postcode structure) extracted from the source data, with the date of the source file copied over.

##### Awk command to view data and sanity check

awk -F "," '{match($66, /([A-Z][A-Z]{0,1})/, outcode); print ($65 $66 NR": dataPostcode\_"substr(FILENAME,22,10)"-"outcode[1]".csv")}' \*.csv

This command will display only, each postcode($65), postcode\_locator($66), the line-number and output filename for each row.

##### Awk command to extract data

awk -F "," '{match($66, /([A-Z][A-Z]{0,1})/, outcode); print > ("dataPostcode\_"substr(FILENAME,22,10)"-"outcode[0]".csv")}' \*.csv

This command will produce the set of output CSV files.

#### Prepare tab separation

A lot of the files, as mentioned, have a comma in some of the text. This will cause problems with awk and you will have a file with this name:

dataPostcode\_yyyy-mm-dd-.csv

To deal with this data that hasn’t been separated into outcode files, we will need to use excel.

Excel will have issues with very large files so execution of the process in this order is more time efficient.

Open the file mentioned above in excel and save the file as a tab-separated file, naming it something like:

dataPostcode\_yyyy-mm-dd-.tsv.txt

##### Awk command to view data and sanity check

awk -F "\t" '{match($66, /([A-Z][A-Z]{0,1})/, outcode); print ($65 $66 NR": dataPostcode\_"substr(FILENAME,14,10)"-"outcode[1]".csv")}' dataPostcode\_\*.tsv.txt

##### Awk command to extract data

awk -F "\t" '{match($66, /([A-Z][A-Z]{0,1})/, outcode); print >> ("dataPostcode\_"substr(FILENAME,14,10)"-"outcode[0]".csv")}' dataPostcode\_\*.tsv.txt

|  |
| --- |
| be aware of the >> operator used in the third phase of this process, this will append to the output files and not overwrite them |

IMPORTANT

The above method is somewhat deprecated – the code, shell-script and the ruby in ordnance\_survey.rb expect a file pattern in the form dataPostcode\_yyyy-mm-dd\_<nnn>\_<outcode>. This can only be produced by the shell-script or by using these AWK commands after cvsquote has been used to remove problematic characters:

*awk* -F "," '{match($66, /([A-Z][A-Z]{0,1})/, outcode); print > (substr(FILENAME,0,length(FILENAME)-4)"-"outcode[0]".awk")}' <name>.csv

## Save these extracted files to AWS

These new files will need to be saved to:

https://console.aws.amazon.com/s3/buckets/ccs.414753715227.postcode-data/dataPostcode2files/

Files can also be saved to /updatePostcodeFiles folder in Amazon

The folder ‘dataPostcode2files’ contains the source for the application’s rake task that reads data files. It is recommended to remove any existing files from this folder if the update being performed is a FULL product and not an UPDATE product.

In production operation, it is not important to delete them because a record is made in the product’s database about which files have been imported; however, for developers with clean databases, the postcodes task will apply all files in the first instance and having extra files will cost (a lot of extra) time and data.

## Obtaining source postcode data

The Public Sector Mapping Agreement between Ordnance Survey and the public sector includes access to the full set of UK postcodes.

<https://www.ordnancesurvey.co.uk/business-and-government/public-sector/mapping-agreements/public-sector-mapping-agreement.html>

AddressBase is the OS product that provides access to 34 million addresses contained within the Royal Mail’s postal address file (PAF), in addition Royal Mail also has already allocated CCS a Public Sector Licence number PSL 05499

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

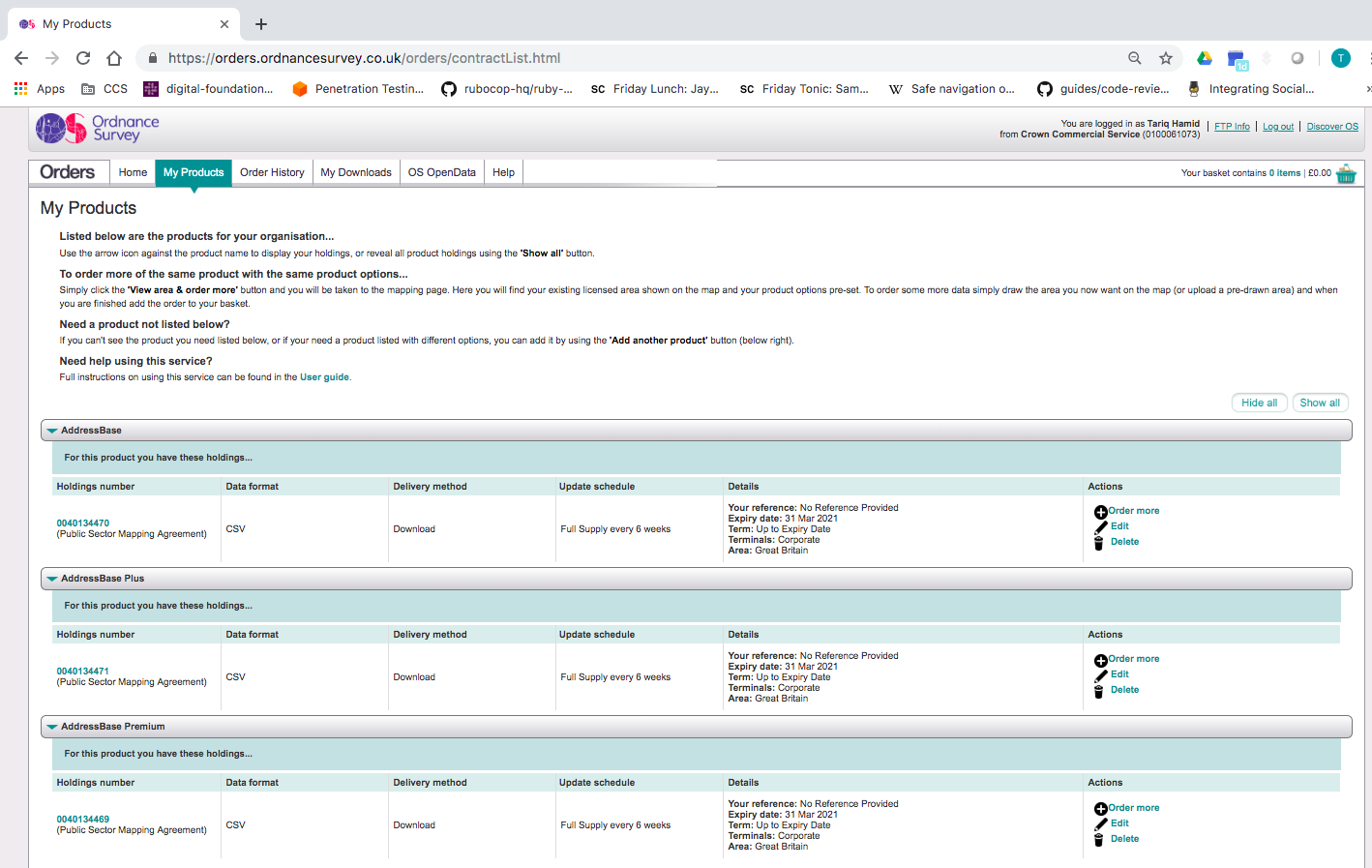
### Steps as follows:

1. Login into OS

Click the link, [Order data (under PSMA/OSMA)](https://orders.ordnancesurvey.co.uk/orders/)

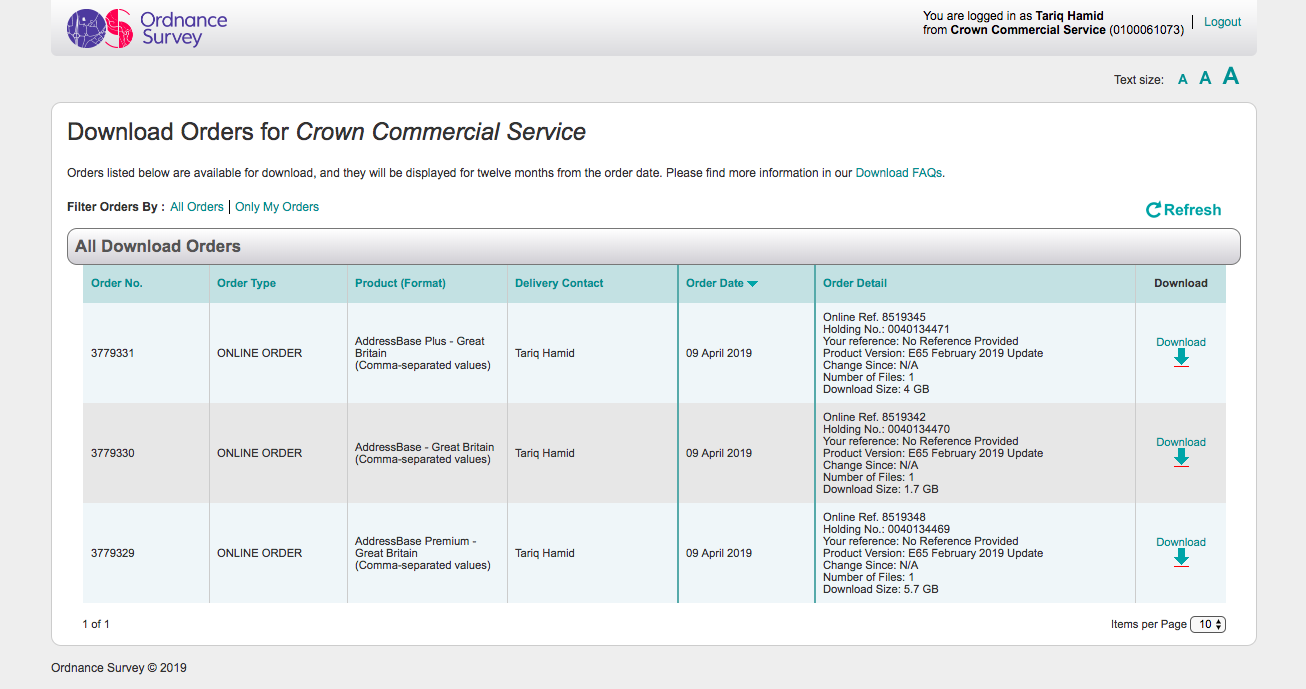
Click the link, [My Products](https://orders.ordnancesurvey.co.uk/orders/contractList.html)

Choose all 3 products: AddressBase, AddressBase Plus,   
AddressBase Premium



Click on [My Downloads](https://www.ordnancesurvey.co.uk/orderdownload/orders) and choose the 3 files to download.

We are interested in the Addressbase Plus dataset. We do not import the other files.



Alternatively use ftp to download the address files.

Paste [ftp://username:password@osmmftp.os.uk/../from-os](ftp://osmmftp.os.uk/from-os)

into a browser or via a terminal window, ftp osmmftp.os.uk

The ftp username and password are on the OS My Products page

Unzip the AddressBase Plus folder, ABFLGB\_CSV.zip.

Upload the contents of this folder to AWS.

Upload the data folder into a database table using CSV import.

# Appendix B – NUT3 Regions

## 2013 Breakdown

Here is a table of the regional components of the UK, their 2013 NUTS3 region codes and the official Region title of each.

|  |  |  |
| --- | --- | --- |
| NUTS3 | Region component | Region name |
| UKC | England | North East (England) |
| UKC | North East | North East (England) |
| UKC1 | Durham | Tees Valley and Durham |
| UKC1 | Tees Valley | Tees Valley and Durham |
| UKC11 | Hartlepool | Hartlepool and Stockton-on-Tees |
| UKC11 | Stockton-on-Tees | Hartlepool and Stockton-on-Tees |
| UKC12 | South Teesside | South Teesside |
| UKC13 | Darlington | Darlington |
| UKC14 | Durham CC | Durham CC |
| UKC2 | Northumberland | Northumberland and Tyne and Wear |
| UKC2 | Tyne | Northumberland and Tyne and Wear |
| UKC2 | Wear | Northumberland and Tyne and Wear |
| UKC21 | Northumberland | Northumberland |
| UKC22 | Tyneside | Tyneside |
| UKC23 | Sunderland | Sunderland |
| UKD | England | North West (England) |
| UKD | North West | North West (England) |
| UKD1 | Cumbria | Cumbria |
| UKD11 | West Cumbria | West Cumbria |
| UKD12 | East Cumbria | East Cumbria |
| UKD3 | Greater Manchester | Greater Manchester |
| UKD33 | Manchester | Manchester |
| UKD34 | Greater Manchester South West | Greater Manchester South West |
| UKD35 | Greater Manchester South East | Greater Manchester South East |
| UKD36 | Greater Manchester North West | Greater Manchester North West |
| UKD37 | Greater Manchester North East | Greater Manchester North East |
| UKD4 | Lancashire | Lancashire |
| UKD41 | Blackburn with Darwen | Blackburn with Darwen |
| UKD42 | Blackpool | Blackpool |
| UKD44 | Lancaster | Lancaster and Wyre |
| UKD44 | Wyre | Lancaster and Wyre |
| UKD45 | Mid Lancashire | Mid Lancashire |
| UKD46 | East Lancashire | East Lancashire |
| UKD47 | Chorley | Chorley and West Lancashire |
| UKD47 | West Lancashire | Chorley and West Lancashire |
| UKD6 | Cheshire | Cheshire |
| UKD61 | Warrington | Warrington |
| UKD62 | Cheshire East | Cheshire East |
| UKD63 | Cheshire West | Cheshire West and Chester |
| UKD63 | Chester | Cheshire West and Chester |
| UKD7 | Merseyside | Merseyside |
| UKD71 | East Merseyside | East Merseyside |
| UKD72 | Liverpool | Liverpool |
| UKD73 | Sefton | Sefton |
| UKD74 | Wirral | Wirral |
| UKE | The Humber | Yorkshire and The Humber |
| UKE | Yorkshire | Yorkshire and The Humber |
| UKE1 | East Yorkshire | East Yorkshire and Northern Lincolnshire |
| UKE1 | Northern Lincolnshire | East Yorkshire and Northern Lincolnshire |
| UKE11 | Kingston upon Hull, City of | Kingston upon Hull, City of |
| UKE12 | East Riding of Yorkshire | East Riding of Yorkshire |
| UKE13 | North East Lincolnshire | North and North East Lincolnshire |
| UKE13 | North Lincolnshire | North and North East Lincolnshire |
| UKE2 | North Yorkshire | North Yorkshire |
| UKE21 | York | York |
| UKE22 | North Yorkshire CC | North Yorkshire CC |
| UKE3 | South Yorkshire | South Yorkshire |
| UKE31 | Barnsley | Barnsley, Doncaster and Rotherham |
| UKE31 | Doncaster | Barnsley, Doncaster and Rotherham |
| UKE31 | Rotherham | Barnsley, Doncaster and Rotherham |
| UKE32 | Sheffield | Sheffield |
| UKE4 | West Yorkshire | West Yorkshire |
| UKE41 | Bradford | Bradford |
| UKE42 | Leeds | Leeds |
| UKE44 | Calderdale | Calderdale and Kirklees |
| UKE44 | Kirklees | Calderdale and Kirklees |
| UKE45 | Wakefield | Wakefield |
| UKF | East Midlands | East Midlands (England) |
| UKF | England | East Midlands (England) |
| UKF1 | Derbyshire | Derbyshire and Nottinghamshire |
| UKF1 | Nottinghamshire | Derbyshire and Nottinghamshire |
| UKF11 | Derby | Derby |
| UKF12 | East Derbyshire | East Derbyshire |
| UKF13 | South Derbyshire | South and West Derbyshire |
| UKF13 | West Derbyshire | South and West Derbyshire |
| UKF14 | Nottingham | Nottingham |
| UKF15 | North Nottinghamshire | North Nottinghamshire |
| UKF16 | South Nottinghamshire | South Nottinghamshire |
| UKF2 | Leicestershire | Leicestershire, Rutland and Northamptonshire |
| UKF2 | Northamptonshire | Leicestershire, Rutland and Northamptonshire |
| UKF2 | Rutland | Leicestershire, Rutland and Northamptonshire |
| UKF21 | Leicester | Leicester |
| UKF22 | Leicestershire CC | Leicestershire CC and Rutland |
| UKF22 | Rutland | Leicestershire CC and Rutland |
| UKF24 | West Northamptonshire | West Northamptonshire |
| UKF25 | North Northamptonshire | North Northamptonshire |
| UKF3 | Lincolnshire | Lincolnshire |
| UKF30 | Lincolnshire | Lincolnshire |
| UKG | England | West Midlands (England) |
| UKG | West Midlands | West Midlands (England) |
| UKG1 | Herefordshire | Herefordshire, Worcestershire and Warwickshire |
| UKG1 | Warwickshire | Herefordshire, Worcestershire and Warwickshire |
| UKG1 | Worcestershire | Herefordshire, Worcestershire and Warwickshire |
| UKG11 | Herefordshire, County\_of | Herefordshire, County of |
| UKG12 | Worcestershire | Worcestershire |
| UKG13 | Warwickshire | Warwickshire |
| UKG2 | Shropshire | Shropshire and Staffordshire |
| UKG2 | Staffordshire | Shropshire and Staffordshire |
| UKG21 | Telford | Telford and Wrekin |
| UKG21 | Wrekin | Telford and Wrekin |
| UKG22 | Shropshire CC | Shropshire CC |
| UKG23 | Stoke-on-Trent | Stoke-on-Trent |
| UKG24 | Staffordshire CC | Staffordshire CC |
| UKG3 | West Midlands | West Midlands |
| UKG31 | Birmingham | Birmingham |
| UKG32 | Solihull | Solihull |
| UKG33 | Coventry | Coventry |
| UKG36 | Dudley | Dudley |
| UKG37 | Sandwell | Sandwell |
| UKG38 | Walsall | Walsall |
| UKG39 | Wolverhampton | Wolverhampton |
| UKH | East of England | East of England |
| UKH1 | East Anglia | East Anglia |
| UKH11 | Peterborough | Peterborough |
| UKH12 | Cambridgeshire CC | Cambridgeshire CC |
| UKH14 | Suffolk | Suffolk |
| UKH15 | Broadland | Norwich and East Norfolk |
| UKH15 | East Norfolk | Norwich and East Norfolk |
| UKH15 | Great Yarmouth | Norwich and East Norfolk |
| UKH15 | Norwich | Norwich and East Norfolk |
| UKH16 | North Norfolk | North and West Norfolk |
| UKH16 | West Norfolk | North and West Norfolk |
| UKH17 | Breckland | Breckland and South Norfolk |
| UKH17 | South Norfolk | Breckland and South Norfolk |
| UKH2 | Bedfordshire | Bedfordshire and Hertfordshire |
| UKH2 | Hertfordshire | Bedfordshire and Hertfordshire |
| UKH21 | Luton | Luton |
| UKH23 | Hertfordshire | Hertfordshire |
| UKH24 | Bedford | Bedford |
| UKH25 | Central Bedfordshire | Central Bedfordshire |
| UKH3 | Essex | Essex |
| UKH31 | Southend-on-Sea | Southend-on-Sea |
| UKH32 | Thurrock | Thurrock |
| UKH34 | Braintree | Essex Haven Gateway |
| UKH34 | Colchester | Essex Haven Gateway |
| UKH34 | Essex Haven Gateway | Essex Haven Gateway |
| UKH34 | Tendring | Essex Haven Gateway |
| UKH35 | Brentwood | West Essex |
| UKH35 | Chelmsford | West Essex |
| UKH35 | West Essex | West Essex |
| UKH36 | Brentwood | Heart of Essex |
| UKH36 | Chelmsford | Heart of Essex |
| UKH36 | Heart of Essex | Heart of Essex |
| UKH36 | Maldon | Heart of Essex |
| UKH37 | Basildon | Essex Thames Gateway |
| UKH37 | Castle Point | Essex Thames Gateway |
| UKH37 | Essex Thames Gateway | Essex Thames Gateway |
| UKH37 | Rochford | Essex Thames Gateway |
| UKI | London | London |
| UKI3 | Inner London - West | Inner London - West |
| UKI31 | Camden and, City of London | Camden and City of London |
| UKI32 | Westminster | Westminster |
| UKI33 | Chelsea | Kensington & Chelsea and Hammersmith & Fulham |
| UKI33 | Fulham | Kensington & Chelsea and Hammersmith & Fulham |
| UKI33 | Hammersmith | Kensington & Chelsea and Hammersmith & Fulham |
| UKI33 | Kensington | Kensington & Chelsea and Hammersmith & Fulham |
| UKI34 | Wandsworth | Wandsworth |
| UKI4 | Inner London - East | Inner London - East |
| UKI41 | Hackney | Hackney and Newham |
| UKI41 | Newham | Hackney and Newham |
| UKI42 | Tower Hamlets | Tower Hamlets |
| UKI43 | Haringey | Haringey and Islington |
| UKI43 | Islington | Haringey and Islington |
| UKI44 | Lewisham | Lewisham and Southwark |
| UKI44 | Southwark | Lewisham and Southwark |
| UKI45 | Lambeth | Lambeth |
| UKI5 | North East | Outer London - East and North East |
| UKI5 | Outer London - East | Outer London - East and North East |
| UKI51 | Bexley | Bexley and Greenwich |
| UKI51 | Greenwich | Bexley and Greenwich |
| UKI52 | Barking | Barking & Dagenham and Havering |
| UKI52 | Dagenham | Barking & Dagenham and Havering |
| UKI52 | Havering | Barking & Dagenham and Havering |
| UKI53 | Redbridge | Redbridge and Waltham Forest |
| UKI53 | Waltham Forest | Redbridge and Waltham Forest |
| UKI54 | Enfield | Enfield |
| UKI6 | Outer London - South | Outer London - South |
| UKI61 | Bromley | Bromley |
| UKI62 | Croydon | Croydon |
| UKI63 | Kingston upon Thames | Merton, Kingston upon Thames and Sutton |
| UKI63 | Merton | Merton, Kingston upon Thames and Sutton |
| UKI63 | Sutton | Merton, Kingston upon Thames and Sutton |
| UKI7 | Outer London - North West | Outer London - West and North West |
| UKI7 | Outer London - West | Outer London - West and North West |
| UKI71 | Barnet | Barnet |
| UKI72 | Brent | Brent |
| UKI73 | Ealing | Ealing |
| UKI74 | Harrow | Harrow and Hillingdon |
| UKI74 | Hillingdon | Harrow and Hillingdon |
| UKI75 | Hounslow | Hounslow and Richmond upon Thames |
| UKI75 | Richmond upon Thames | Hounslow and Richmond upon Thames |
| UKJ | England | South East (England) |
| UKJ | South East | South East (England) |
| UKJ1 | Berkshire | Berkshire, Buckinghamshire and Oxfordshire |
| UKJ1 | Buckinghamshire | Berkshire, Buckinghamshire and Oxfordshire |
| UKJ1 | Oxfordshire | Berkshire, Buckinghamshire and Oxfordshire |
| UKJ11 | Berkshire | Berkshire |
| UKJ12 | Milton Keynes | Milton Keynes |
| UKJ13 | Buckinghamshire CC | Buckinghamshire CC |
| UKJ14 | Oxfordshire | Oxfordshire |
| UKJ2 | East | Surrey, East and West Sussex |
| UKJ2 | Surrey | Surrey, East and West Sussex |
| UKJ2 | West Sussex | Surrey, East and West Sussex |
| UKJ21 | Brighton | Brighton and Hove |
| UKJ21 | Hove | Brighton and Hove |
| UKJ22 | East Sussex CC | East Sussex CC |
| UKJ25 | Elmbridge | West Surrey |
| UKJ25 | Guildford | West Surrey |
| UKJ25 | Runnymede | West Surrey |
| UKJ25 | Spelthorne | West Surrey |
| UKJ25 | Surrey Heath | West Surrey |
| UKJ25 | Waverley | West Surrey |
| UKJ25 | West Surrey | West Surrey |
| UKJ25 | Woking | West Surrey |
| UKJ26 | Banstead | East Surrey |
| UKJ26 | East Surrey | East Surrey |
| UKJ26 | Epsom | East Surrey |
| UKJ26 | Ewell | East Surrey |
| UKJ26 | Mole Valley | East Surrey |
| UKJ26 | Reigate | East Surrey |
| UKJ26 | Tandridge | East Surrey |
| UKJ27 | South West | West Sussex (South West) |
| UKJ27 | West Sussex | West Sussex (South West) |
| UKJ28 | North East | West Sussex (North East) |
| UKJ28 | West Sussex | West Sussex (North East) |
| UKJ3 | Hampshire | Hampshire and Isle of Wight |
| UKJ3 | Isle of Wight | Hampshire and Isle of Wight |
| UKJ31 | Portsmouth | Portsmouth |
| UKJ32 | Southampton | Southampton |
| UKJ34 | Isle of Wight | Isle of Wight |
| UKJ35 | Eastleigh | South Hampshire |
| UKJ35 | Fareham | South Hampshire |
| UKJ35 | Gosport | South Hampshire |
| UKJ35 | Havant | South Hampshire |
| UKJ35 | South Hampshire | South Hampshire |
| UKJ36 | Central Hampshire | Central Hampshire |
| UKJ36 | East Hampshire | Central Hampshire |
| UKJ36 | New Forest | Central Hampshire |
| UKJ36 | Test Valley | Central Hampshire |
| UKJ36 | Winchester | Central Hampshire |
| UKJ37 | Basingstoke | North Hampshire |
| UKJ37 | Deane | North Hampshire |
| UKJ37 | Hart | North Hampshire |
| UKJ37 | North Hampshire | North Hampshire |
| UKJ37 | Rushmoor | North Hampshire |
| UKJ4 | Kent | Kent |
| UKJ41 | Medway | Medway |
| UKJ43 | Dartford | Kent Thames Gateway |
| UKJ43 | Gravesham | Kent Thames Gateway |
| UKJ43 | Kent Thames Gateway | Kent Thames Gateway |
| UKJ43 | Swale | Kent Thames Gateway |
| UKJ44 | Canterbury | East Kent |
| UKJ44 | Dover | East Kent |
| UKJ44 | East Kent | East Kent |
| UKJ44 | Folkestone | East Kent |
| UKJ44 | Hythe | East Kent |
| UKJ44 | Thanet | East Kent |
| UKJ45 | Ashford | Mid Kent |
| UKJ45 | Maidstone | Mid Kent |
| UKJ45 | Mid Kent | Mid Kent |
| UKJ46 | Malling | West Kent |
| UKJ46 | Sevenoaks | West Kent |
| UKJ46 | Tonbridge | West Kent |
| UKJ46 | Tunbridge Wells | West Kent |
| UKJ46 | West Kent | West Kent |
| UKK | England | South West (England) |
| UKK | South West | South West (England) |
| UKK1 | Bristol/Bath area | Gloucestershire, Wiltshire and Bristol/Bath area |
| UKK1 | Gloucestershire | Gloucestershire, Wiltshire and Bristol/Bath area |
| UKK1 | Wiltshire | Gloucestershire, Wiltshire and Bristol/Bath area |
| UKK11 | Bristol, City of | Bristol, City of |
| UKK12 | Bath | Bath and North East Somerset, North Somerset and South Gloucestershire |
| UKK12 | North East Somerset | Bath and North East Somerset, North Somerset and South Gloucestershire |
| UKK12 | North Somerset | Bath and North East Somerset, North Somerset and South Gloucestershire |
| UKK12 | South Gloucestershire | Bath and North East Somerset, North Somerset and South Gloucestershire |
| UKK13 | Gloucestershire | Gloucestershire |
| UKK14 | Swindon | Swindon |
| UKK15 | Wiltshire | Wiltshire |
| UKK2 | Dorset | Dorset and Somerset |
| UKK2 | Somerset | Dorset and Somerset |
| UKK21 | Bournemouth | Bournemouth and Poole |
| UKK21 | Poole | Bournemouth and Poole |
| UKK22 | Dorset CC | Dorset CC |
| UKK23 | Somerset | Somerset |
| UKK3 | Cornwall | Cornwall and Isles of Scilly |
| UKK3 | Isles of Scilly | Cornwall and Isles of Scilly |
| UKK30 | Cornwall | Cornwall and Isles of Scilly |
| UKK30 | Isles of Scilly | Cornwall and Isles of Scilly |
| UKK4 | Devon | Devon |
| UKK41 | Plymouth | Plymouth |
| UKK42 | Torbay | Torbay |
| UKK43 | Devon CC | Devon CC |
| UKL | Wales | Wales |
| UKL1 | The Valleys | West Wales and The Valleys |
| UKL1 | West Wales | West Wales and The Valleys |
| UKL11 | Isle of Anglesey | Isle of Anglesey |
| UKL12 | Gwynedd | Gwynedd |
| UKL13 | Conwy | Conwy and Denbighshire |
| UKL13 | Denbighshire | Conwy and Denbighshire |
| UKL14 | Carmarthenshire | South West Wales |
| UKL14 | Ceredigion | South West Wales |
| UKL14 | Pembrokeshire | South West Wales |
| UKL14 | South West Wales | South West Wales |
| UKL15 | Central Valleys | Central Valleys |
| UKL15 | Merthyr Tydfil | Central Valleys |
| UKL15 | Rhondda Cynon Taff | Central Valleys |
| UKL16 | Blaenau Gwent | Gwent Valleys |
| UKL16 | Caerphilly | Gwent Valleys |
| UKL16 | Gwent Valleys | Gwent Valleys |
| UKL16 | Torfaen | Gwent Valleys |
| UKL17 | Bridgend | Bridgend and Neath Port Talbot |
| UKL17 | Neath Port Talbot | Bridgend and Neath Port Talbot |
| UKL18 | Swansea | Swansea |
| UKL2 | East Wales | East Wales |
| UKL21 | Monmouthshire | Monmouthshire and Newport |
| UKL21 | Newport | Monmouthshire and Newport |
| UKL22 | Cardiff | Cardiff and Vale of Glamorgan |
| UKL22 | Vale of Glamorgan | Cardiff and Vale of Glamorgan |
| UKL23 | Flintshire | Flintshire and Wrexham |
| UKL23 | Wrexham | Flintshire and Wrexham |
| UKL24 | Powys | Powys |
| UKM | Scotland | Scotland |
| UKM2 | Eastern Scotland | Eastern Scotland |
| UKM21 | Angus | Angus and Dundee City |
| UKM21 | Dundee City | Angus and Dundee City |
| UKM22 | Clackmannanshire | Clackmannanshire and Fife |
| UKM22 | Fife | Clackmannanshire and Fife |
| UKM23 | East Lothian | East Lothian and Midlothian |
| UKM23 | Midlothian | East Lothian and Midlothian |
| UKM24 | Scottish Borders | Scottish Borders |
| UKM25 | Edinburgh, City of | Edinburgh, City of |
| UKM26 | Falkirk | Falkirk |
| UKM27 | Kinross | Perth & Kinross and Stirling |
| UKM27 | Perth | Perth & Kinross and Stirling |
| UKM27 | Stirling | Perth & Kinross and Stirling |
| UKM28 | West Lothian | West Lothian |
| UKM3 | South Western Scotland | South Western Scotland |
| UKM31 | East Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond |
| UKM31 | Helensburgh | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond |
| UKM31 | Lomond | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond |
| UKM31 | West Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond |
| UKM32 | Dumfries | Dumfries & Galloway |
| UKM32 | Galloway | Dumfries & Galloway |
| UKM33 | East Ayrshire | East Ayrshire and North Ayrshire mainland |
| UKM33 | North Ayrshire mainland | East Ayrshire and North Ayrshire mainland |
| UKM34 | Glasgow City | Glasgow City |
| UKM35 | East Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire |
| UKM35 | Inverclyde | Inverclyde, East Renfrewshire and Renfrewshire |
| UKM35 | Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire |
| UKM36 | North Lanarkshire | North Lanarkshire |
| UKM37 | South Ayrshire | South Ayrshire |
| UKM38 | South Lanarkshire | South Lanarkshire |
| UKM5 | North Eastern Scotland | North Eastern Scotland |
| UKM50 | Aberdeen City | Aberdeen City and Aberdeenshire |
| UKM50 | Aberdeenshire | Aberdeen City and Aberdeenshire |
| UKM6 | Highlands | Highlands and Islands |
| UKM6 | Islands | Highlands and Islands |
| UKM61 | Caithness | Caithness & Sutherland and Ross & Cromarty |
| UKM61 | Cromarty | Caithness & Sutherland and Ross & Cromarty |
| UKM61 | Ross | Caithness & Sutherland and Ross & Cromarty |
| UKM61 | Sutherland | Caithness & Sutherland and Ross & Cromarty |
| UKM62 | Badenoch | Inverness & Nairn and Moray, Badenoch & Strathspey |
| UKM62 | Inverness | Inverness & Nairn and Moray, Badenoch & Strathspey |
| UKM62 | Moray | Inverness & Nairn and Moray, Badenoch & Strathspey |
| UKM62 | Nairn | Inverness & Nairn and Moray, Badenoch & Strathspey |
| UKM62 | Strathspey | Inverness & Nairn and Moray, Badenoch & Strathspey |
| UKM63 | Argyll | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM63 | Arran | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM63 | Bute | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM63 | Cumbrae | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM63 | Lochaber | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM63 | Lochalsh | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM63 | Skye | Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute |
| UKM64 | Eilean Siar | Eilean Siar (Western Isles) |
| UKM64 | Western Isles | Eilean Siar (Western Isles) |
| UKM65 | Orkney Islands | Orkney Islands |
| UKM66 | Shetland Islands | Shetland Islands |
| UKN | Northern Ireland | Northern Ireland |
| UKN0 | Northern Ireland | Northern Ireland |
| UKN01 | Belfast | Belfast |
| UKN02 | Carrickfergus | Outer Belfast |
| UKN02 | Castlereagh | Outer Belfast |
| UKN02 | Lisburn | Outer Belfast |
| UKN02 | Newtownabbey | Outer Belfast |
| UKN02 | North Down | Outer Belfast |
| UKN02 | Outer Belfast | Outer Belfast |
| UKN03 | Antrim | East of Northern Ireland |
| UKN03 | Ards | East of Northern Ireland |
| UKN03 | Ballymena | East of Northern Ireland |
| UKN03 | Banbridge | East of Northern Ireland |
| UKN03 | Craigavon | East of Northern Ireland |
| UKN03 | Down | East of Northern Ireland |
| UKN03 | East of Northern Ireland | East of Northern Ireland |
| UKN03 | Larne | East of Northern Ireland |
| UKN04 | Ballymoney | North of Northern Ireland |
| UKN04 | Coleraine | North of Northern Ireland |
| UKN04 | Derry | North of Northern Ireland |
| UKN04 | Limavady | North of Northern Ireland |
| UKN04 | Moyle | North of Northern Ireland |
| UKN04 | North of Northern Ireland | North of Northern Ireland |
| UKN04 | Strabane | North of Northern Ireland |
| UKN05 | Ballymoney | West and South of Northern Ireland |
| UKN05 | Coleraine | West and South of Northern Ireland |
| UKN05 | Derry | West and South of Northern Ireland |
| UKN05 | Limavady | West and South of Northern Ireland |
| UKN05 | Moyle | West and South of Northern Ireland |
| UKN05 | South of Northern Ireland | West and South of Northern Ireland |
| UKN05 | Strabane | West and South of Northern Ireland |
| UKN05 | West Northern | West and South of Northern Ireland |

## 2016 Breakdown

The following table shows the regional components of the 2016 Eurostat data.

|  |  |  |  |
| --- | --- | --- | --- |
| New | NUTS3 2016 | Regional component | Office 2016 Region Name |
|  | UKC11 | Hartlepool | Hartlepool and Stockton-on-Tees |
|  | UKC11 | Stockton-on-Tees | Hartlepool and Stockton-on-Tees |
|  | UKC12 | South Teesside | South Teesside |
|  | UKC13 | Darlington | Darlington |
|  | UKC14 | Durham CC | Durham CC |
|  | UKC21 | Northumberland | Northumberland |
|  | UKC22 | Tyneside | Tyneside |
|  | UKC23 | Sunderland | Sunderland |
|  | UKD11 | West Cumbria | West Cumbria |
|  | UKD12 | East Cumbria | East Cumbria |
|  | UKD33 | Manchester | Manchester |
|  | UKD34 | Greater Manchester South West | Greater Manchester South West |
|  | UKD35 | Greater Manchester South East | Greater Manchester South East |
|  | UKD36 | Greater Manchester North West | Greater Manchester North West |
|  | UKD37 | Greater Manchester North East | Greater Manchester North East |
|  | UKD41 | Blackburn with Darwen | Blackburn with Darwen |
|  | UKD42 | Blackpool | Blackpool |
|  | UKD44 | Lancaster | Lancaster and Wyre |
|  | UKD44 | Wyre | Lancaster and Wyre |
|  | UKD45 | Mid Lancashire | Mid Lancashire |
|  | UKD46 | East Lancashire | East Lancashire |
|  | UKD47 | Chorley | Chorley and West Lancashire |
|  | UKD47 | West Lancashire | Chorley and West Lancashire |
|  | UKD61 | Warrington | Warrington |
|  | UKD62 | Cheshire East | Cheshire East |
|  | UKD63 | Cheshire West | Cheshire West and Chester |
|  | UKD63 | Chester | Cheshire West and Chester |
|  | UKD71 | East Merseyside | East Merseyside |
|  | UKD72 | Liverpool | Liverpool |
|  | UKD73 | Sefton | Sefton |
|  | UKD74 | Wirral | Wirral |
|  | UKE11 | Kingston upon Hull, City of | Kingston upon Hull, City of |
|  | UKE12 | East Riding of Yorkshire | East Riding of Yorkshire |
|  | UKE13 | North Lincolnshire | North and North East Lincolnshire |
|  | UKE13 | North East Lincolnshire | North and North East Lincolnshire |
|  | UKE21 | York | York |
|  | UKE22 | North Yorkshire CC | North Yorkshire CC |
|  | UKE31 | Barnsley | Barnsley, Doncaster and Rotherham |
|  | UKE31 | Doncaster | Barnsley, Doncaster and Rotherham |
|  | UKE31 | Rotherham | Barnsley, Doncaster and Rotherham |
|  | UKE32 | Sheffield | Sheffield |
|  | UKE41 | Bradford | Bradford |
|  | UKE42 | Leeds | Leeds |
|  | UKE44 | Calderdale | Calderdale and Kirklees |
|  | UKE44 | Kirklees | Calderdale and Kirklees |
|  | UKE45 | Wakefield | Wakefield |
|  | UKF11 | Derby | Derby |
|  | UKF12 | East Derbyshire | East Derbyshire |
|  | UKF13 | South Derbyshire | South and West Derbyshire |
|  | UKF13 | West Derbyshire | South and West Derbyshire |
|  | UKF14 | Nottingham | Nottingham |
|  | UKF15 | North Nottinghamshire | North Nottinghamshire |
|  | UKF16 | South Nottinghamshire | South Nottinghamshire |
|  | UKF21 | Leicester | Leicester |
|  | UKF22 | Leicestershire CC | Leicestershire CC and Rutland |
|  | UKF22 | Rutland | Leicestershire CC and Rutland |
|  | UKF24 | West Northamptonshire | West Northamptonshire |
|  | UKF25 | North Northamptonshire | North Northamptonshire |
|  | UKF30 | Lincolnshire | Lincolnshire |
|  | UKG11 | Herefordshire, County\_of | Herefordshire, County of |
|  | UKG12 | Worcestershire | Worcestershire |
|  | UKG13 | Warwickshire | Warwickshire |
|  | UKG21 | Telford | Telford and Wrekin |
|  | UKG21 | Wrekin | Telford and Wrekin |
|  | UKG22 | Shropshire CC | Shropshire CC |
|  | UKG23 | Stoke-on-Trent | Stoke-on-Trent |
|  | UKG24 | Staffordshire CC | Staffordshire CC |
|  | UKG31 | Birmingham | Birmingham |
|  | UKG32 | Solihull | Solihull |
|  | UKG33 | Coventry | Coventry |
|  | UKG36 | Dudley | Dudley |
|  | UKG37 | Sandwell | Sandwell |
|  | UKG38 | Walsall | Walsall |
|  | UKG39 | Wolverhampton | Wolverhampton |
|  | UKH11 | Peterborough | Peterborough |
|  | UKH12 | Cambridgeshire CC | Cambridgeshire CC |
|  | UKH14 | Suffolk | Suffolk |
|  | UKH15 | Norwich | Norwich and East Norfolk |
|  | UKH15 | East Norfolk | Norwich and East Norfolk |
|  | UKH16 | North Norfolk | North and West Norfolk |
|  | UKH16 | West Norfolk | North and West Norfolk |
|  | UKH17 | Breckland | Breckland and South Norfolk |
|  | UKH17 | South Norfolk | Breckland and South Norfolk |
|  | UKH21 | Luton | Luton |
|  | UKH23 | Hertfordshire | Hertfordshire |
|  | UKH24 | Bedford | Bedford |
|  | UKH25 | Central Bedfordshire | Central Bedfordshire |
|  | UKH31 | Southend-on-Sea | Southend-on-Sea |
|  | UKH32 | Thurrock | Thurrock |
|  | UKH34 | Essex Haven Gateway | Essex Haven Gateway |
|  | UKH35 | West Essex | West Essex |
|  | UKH36 | Heart of Essex | Heart of Essex |
|  | UKH37 | Essex Thames Gateway | Essex Thames Gateway |
|  | UKI31 | Camden and, City of London | Camden and City of London |
|  | UKI32 | Westminster | Westminster |
|  | UKI33 | Kensington | Kensington & Chelsea and Hammersmith & Fulham |
|  | UKI33 | Chelsea | Kensington & Chelsea and Hammersmith & Fulham |
|  | UKI33 | Hammersmith | Kensington & Chelsea and Hammersmith & Fulham |
|  | UKI33 | Fulham | Kensington & Chelsea and Hammersmith & Fulham |
|  | UKI34 | Wandsworth | Wandsworth |
|  | UKI41 | Hackney | Hackney and Newham |
|  | UKI41 | Newham | Hackney and Newham |
|  | UKI42 | Tower Hamlets | Tower Hamlets |
|  | UKI43 | Haringey | Haringey and Islington |
|  | UKI43 | Islington | Haringey and Islington |
|  | UKI44 | Lewisham | Lewisham and Southwark |
|  | UKI44 | Southwark | Lewisham and Southwark |
|  | UKI45 | Lambeth | Lambeth |
|  | UKI51 | Bexley | Bexley and Greenwich |
|  | UKI51 | Greenwich | Bexley and Greenwich |
|  | UKI52 | Barking | Barking & Dagenham and Havering |
|  | UKI52 | Dagenham | Barking & Dagenham and Havering |
|  | UKI52 | Havering | Barking & Dagenham and Havering |
|  | UKI53 | Redbridge | Redbridge and Waltham Forest |
|  | UKI53 | Waltham Forest | Redbridge and Waltham Forest |
|  | UKI54 | Enfield | Enfield |
|  | UKI61 | Bromley | Bromley |
|  | UKI62 | Croydon | Croydon |
|  | UKI63 | Merton | Merton, Kingston upon Thames and Sutton |
|  | UKI63 | Kingston upon Thames | Merton, Kingston upon Thames and Sutton |
|  | UKI63 | Sutton | Merton, Kingston upon Thames and Sutton |
|  | UKI71 | Barnet | Barnet |
|  | UKI72 | Brent | Brent |
|  | UKI73 | Ealing | Ealing |
|  | UKI74 | Harrow | Harrow and Hillingdon |
|  | UKI74 | Hillingdon | Harrow and Hillingdon |
|  | UKI75 | Hounslow | Hounslow and Richmond upon Thames |
|  | UKI75 | Richmond upon Thames | Hounslow and Richmond upon Thames |
|  | UKJ11 | Berkshire | Berkshire |
|  | UKJ12 | Milton Keynes | Milton Keynes |
|  | UKJ13 | Buckinghamshire CC | Buckinghamshire CC |
|  | UKJ14 | Oxfordshire | Oxfordshire |
|  | UKJ21 | Brighton | Brighton and Hove |
|  | UKJ21 | Hove | Brighton and Hove |
|  | UKJ22 | East Sussex CC | East Sussex CC |
|  | UKJ25 | West Surrey | West Surrey |
|  | UKJ26 | East Surrey | East Surrey |
|  | UKJ27 | West Sussex (South West) | West Sussex (South West) |
|  | UKJ28 | West Sussex (North East) | West Sussex (North East) |
|  | UKJ31 | Portsmouth | Portsmouth |
|  | UKJ32 | Southampton | Southampton |
|  | UKJ34 | Isle of Wight | Isle of Wight |
|  | UKJ35 | South Hampshire | South Hampshire |
|  | UKJ36 | Central Hampshire | Central Hampshire |
|  | UKJ37 | North Hampshire | North Hampshire |
|  | UKJ41 | Medway | Medway |
|  | UKJ43 | Kent Thames Gateway | Kent Thames Gateway |
|  | UKJ44 | East Kent | East Kent |
|  | UKJ45 | Mid Kent | Mid Kent |
|  | UKJ46 | West Kent | West Kent |
|  | UKK11 | Bristol, City of | Bristol, City of |
|  | UKK12 | Bath | Bath and North East Somerset, North Somerset and South Gloucestershire |
|  | UKK12 | North East Somerset | Bath and North East Somerset, North Somerset and South Gloucestershire |
|  | UKK12 | North Somerset | Bath and North East Somerset, North Somerset and South Gloucestershire |
|  | UKK12 | South Gloucestershire | Bath and North East Somerset, North Somerset and South Gloucestershire |
|  | UKK13 | Gloucestershire | Gloucestershire |
|  | UKK14 | Swindon | Swindon |
|  | UKK15 | Wiltshire | Wiltshire |
|  | UKK21 | Bournemouth | Bournemouth and Poole |
|  | UKK21 | Poole | Bournemouth and Poole |
|  | UKK22 | Dorset CC | Dorset CC |
|  | UKK23 | Somerset | Somerset |
|  | UKK30 | Cornwall | Cornwall and Isles of Scilly |
|  | UKK30 | Isles of Scilly | Cornwall and Isles of Scilly |
|  | UKK41 | Plymouth | Plymouth |
|  | UKK42 | Torbay | Torbay |
|  | UKK43 | Devon CC | Devon CC |
|  | UKL11 | Isle of Anglesey | Isle of Anglesey |
|  | UKL12 | Gwynedd | Gwynedd |
|  | UKL13 | Conwy | Conwy and Denbighshire |
|  | UKL13 | Denbighshire | Conwy and Denbighshire |
|  | UKL14 | South West Wales | South West Wales |
|  | UKL15 | Central Valleys | Central Valleys |
|  | UKL16 | Gwent Valleys | Gwent Valleys |
|  | UKL17 | Bridgend | Bridgend and Neath Port Talbot |
|  | UKL17 | Neath Port Talbot | Bridgend and Neath Port Talbot |
|  | UKL18 | Swansea | Swansea |
|  | UKL21 | Monmouthshire | Monmouthshire and Newport |
|  | UKL21 | Newport | Monmouthshire and Newport |
|  | UKL22 | Cardiff | Cardiff and Vale of Glamorgan |
|  | UKL22 | Vale of Glamorgan | Cardiff and Vale of Glamorgan |
|  | UKL23 | Flintshire | Flintshire and Wrexham |
|  | UKL23 | Wrexham | Flintshire and Wrexham |
|  | UKL24 | Powys | Powys |
|  | UKM50 | Aberdeen City | Aberdeen City and Aberdeenshire |
|  | UKM50 | Aberdeenshire | Aberdeen City and Aberdeenshire |
|  | UKM61 | Caithness | Caithness and Sutherland and Ross and Cromarty |
|  | UKM61 | Sutherland | Caithness and Sutherland and Ross and Cromarty |
|  | UKM61 | Ross | Caithness and Sutherland and Ross and Cromarty |
|  | UKM61 | Cromarty | Caithness and Sutherland and Ross and Cromarty |
|  | UKM62 | Inverness | Inverness and Nairn and Moray, Badenoch and Strathspey |
|  | UKM62 | Nairn | Inverness and Nairn and Moray, Badenoch and Strathspey |
|  | UKM62 | Moray | Inverness and Nairn and Moray, Badenoch and Strathspey |
|  | UKM62 | Badenoch | Inverness and Nairn and Moray, Badenoch and Strathspey |
|  | UKM62 | Strathspey | Inverness and Nairn and Moray, Badenoch and Strathspey |
|  | UKM63 | Lochaber | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM63 | Skye | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM63 | Lochalsh | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM63 | Arran | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM63 | Cumbrae | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM63 | Argyll | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM63 | Bute | Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute |
|  | UKM64 | Eilean Siar (Western Isles) | Eilean Siar (Western Isles) |
|  | UKM65 | Orkney Islands | Orkney Islands |
|  | UKM66 | Shetland Islands | Shetland Islands |
| \* | UKM71 | Angus | Angus and Dundee City |
| \* | UKM71 | Dundee City | Angus and Dundee City |
| \* | UKM72 | Clackmannanshire | Clackmannanshire and Fife |
| \* | UKM72 | Fife | Clackmannanshire and Fife |
| \* | UKM73 | East Lothian | East Lothian and Midlothian |
| \* | UKM73 | Midlothian | East Lothian and Midlothian |
| \* | UKM75 | City of Edinburgh | City of Edinburgh |
| \* | UKM76 | Falkirk | Falkirk |
| \* | UKM77 | Perth | Perth and Kinross and Stirling |
| \* | UKM77 | Kinross | Perth and Kinross and Stirling |
| \* | UKM77 | Stirling | Perth and Kinross and Stirling |
| \* | UKM78 | West Lothian | West Lothian |
| \* | UKM81 | East Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond |
| \* | UKM81 | West Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond |
| \* | UKM81 | Helensburgh | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond |
| \* | UKM81 | Lomond | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond |
| \* | UKM82 | Glasgow City | Glasgow City |
| \* | UKM83 | Inverclyde | Inverclyde, East Renfrewshire and Renfrewshire |
| \* | UKM83 | East Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire |
| \* | UKM83 | Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire |
| \* | UKM84 | North Lanarkshire | North Lanarkshire |
| \* | UKM91 | Scottish Borders | Scottish Borders |
| \* | UKM92 | Dumfries | Dumfries and Galloway |
| \* | UKM92 | Galloway | Dumfries and Galloway |
| \* | UKM93 | East Ayrshire | East Ayrshire and North Ayrshire mainland |
| \* | UKM93 | North Ayrshire mainland | East Ayrshire and North Ayrshire mainland |
| \* | UKM94 | South Ayrshire | South Ayrshire |
| \* | UKM95 | South Lanarkshire | South Lanarkshire |
| \* | UKN06 | Belfast | Belfast |
| \* | UKN07 | Armagh City | Armagh City, Banbridge and Craigavon |
| \* | UKN07 | Banbridge | Armagh City, Banbridge and Craigavon |
| \* | UKN07 | Craigavon | Armagh City, Banbridge and Craigavon |
| \* | UKN08 | Newry | Newry, Mourne and Down |
| \* | UKN08 | Mourne | Newry, Mourne and Down |
| \* | UKN08 | Down | Newry, Mourne and Down |
| \* | UKN09 | Ards | Ards and North Down |
| \* | UKN09 | North Down | Ards and North Down |
| \* | UKN10 | Derry City | Derry City and Strabane |
| \* | UKN10 | Strabane | Derry City and Strabane |
| \* | UKN11 | Mid Ulster | Mid Ulster |
| \* | UKN12 | Causeway Coast | Causeway Coast and Glens |
| \* | UKN12 | Glens | Causeway Coast and Glens |
| \* | UKN13 | Antrim | Antrim and Newtownabbey |
| \* | UKN13 | Newtownabbey | Antrim and Newtownabbey |
| \* | UKN14 | Lisburn | Lisburn and Castlereagh |
| \* | UKN14 | Castlereagh | Lisburn and Castlereagh |
| \* | UKN15 | Mid Antrim | Mid and East Antrim |
| \* | UKN15 | East Antrim | Mid and East Antrim |
| \* | UKN16 | Fermanagh | Fermanagh and Omagh |
| \* | UKN16 | Omagh | Fermanagh and Omagh |

## Differences between 2013/2016 Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Different | nuts3 | year | Region Component | Region name |
| \* | UKM71 | 2016 | Angus | Angus and Dundee City (2016) |
| \* | UKM21 | 2013 | Angus | Angus and Dundee City (2013) |
| \* | UKN03 | 2013 | Antrim | East of Northern Ireland (2013) |
| \* | UKN13 | 2016 | Antrim | Antrim and Newtownabbey (2016) |
| \* | UKN09 | 2016 | Ards | Ards and North Down (2016) |
| \* | UKN03 | 2013 | Ards | East of Northern Ireland (2013) |
| \* | UKN07 | 2016 | Armagh City | Armagh City, Banbridge and Craigavon (2016) |
| \* | UKN03 | 2013 | Ballymena | East of Northern Ireland (2013) |
| \* | UKN04 | 2013 | Ballymoney | North of Northern Ireland (2013) |
| \* | UKN05 | 2013 | Ballymoney | West and South of Northern Ireland (2013) |
| \* | UKN07 | 2016 | Banbridge | Armagh City, Banbridge and Craigavon (2016) |
| \* | UKN03 | 2013 | Banbridge | East of Northern Ireland (2013) |
| \* | UKN01 | 2013 | Belfast | Belfast (2013) |
| \* | UKN06 | 2016 | Belfast | Belfast (2016) |
| \* | UKN02 | 2013 | Carrickfergus | Outer Belfast (2013) |
| \* | UKN14 | 2016 | Castlereagh | Lisburn and Castlereagh (2016) |
| \* | UKN02 | 2013 | Castlereagh | Outer Belfast (2013) |
| \* | UKN12 | 2016 | Causeway Coast | Causeway Coast and Glens (2016) |
| \* | UKD6 | 2013 | Cheshire | Cheshire (2013) |
| \* | UKM75 | 2016 | City of Edinburgh | City of Edinburgh (2016) |
| \* | UKM22 | 2013 | Clackmannanshire | Clackmannanshire and Fife (2013) |
| \* | UKM72 | 2016 | Clackmannanshire | Clackmannanshire and Fife (2016) |
| \* | UKN04 | 2013 | Coleraine | North of Northern Ireland (2013) |
| \* | UKN07 | 2016 | Craigavon | Armagh City, Banbridge and Craigavon (2016) |
| \* | UKN03 | 2013 | Craigavon | East of Northern Ireland (2013) |
| \* | UKN04 | 2013 | Derry | North of Northern Ireland (2013) |
| \* | UKN10 | 2016 | Derry City | Derry City and Strabane (2016) |
| \* | UKN08 | 2016 | Down | Newry, Mourne and Down (2016) |
| \* | UKN03 | 2013 | Down | East of Northern Ireland (2013) |
| \* | UKM92 | 2016 | Dumfries | Dumfries and Galloway (2016) |
| \* | UKM32 | 2013 | Dumfries | Dumfries & Galloway (2013) |
| \* | UKM21 | 2013 | Dundee City | Angus and Dundee City (2013) |
| \* | UKM71 | 2016 | Dundee City | Angus and Dundee City (2016) |
| \* | UKN15 | 2016 | East Antrim | Mid and East Antrim (2016) |
| \* | UKM93 | 2016 | East Ayrshire | East Ayrshire and North Ayrshire mainland (2016) |
| \* | UKM33 | 2013 | East Ayrshire | East Ayrshire and North Ayrshire mainland (2013) |
| \* | UKM81 | 2016 | East Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond (2016) |
| \* | UKM31 | 2013 | East Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond (2013) |
| \* | UKM73 | 2016 | East Lothian | East Lothian and Midlothian (2016) |
| \* | UKM23 | 2013 | East Lothian | East Lothian and Midlothian (2013) |
| \* | UKM35 | 2013 | East Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire (2013) |
| \* | UKM83 | 2016 | East Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire (2016) |
| \* | UKN03 | 2013 | East of Northern Ireland | East of Northern Ireland (2013) |
| \* | UKM25 | 2013 | Edinburgh, City of | Edinburgh, City of (2013) |
| \* | UKM26 | 2013 | Falkirk | Falkirk (2013) |
| \* | UKM76 | 2016 | Falkirk | Falkirk (2016) |
| \* | UKN16 | 2016 | Fermanagh | Fermanagh and Omagh (2016) |
| \* | UKM72 | 2016 | Fife | Clackmannanshire and Fife (2016) |
| \* | UKM22 | 2013 | Fife | Clackmannanshire and Fife (2013) |
| \* | UKM32 | 2013 | Galloway | Dumfries & Galloway (2013) |
| \* | UKM92 | 2016 | Galloway | Dumfries and Galloway (2016) |
| \* | UKM82 | 2016 | Glasgow City | Glasgow City (2016) |
| \* | UKM34 | 2013 | Glasgow City | Glasgow City (2013) |
| \* | UKN12 | 2016 | Glens | Causeway Coast and Glens (2016) |
| \* | UKM81 | 2016 | Helensburgh | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond (2016) |
| \* | UKM31 | 2013 | Helensburgh | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond (2013) |
| \* | UKM83 | 2016 | Inverclyde | Inverclyde, East Renfrewshire and Renfrewshire (2016) |
| \* | UKM35 | 2013 | Inverclyde | Inverclyde, East Renfrewshire and Renfrewshire (2013) |
| \* | UKM77 | 2016 | Kinross | Perth and Kinross and Stirling (2016) |
| \* | UKM27 | 2013 | Kinross | Perth & Kinross and Stirling (2013) |
| \* | UKN03 | 2013 | Larne | East of Northern Ireland (2013) |
| \* | UKN04 | 2013 | Limavady | North of Northern Ireland (2013) |
| \* | UKN05 | 2013 | Limavady | West and South of Northern Ireland (2013) |
| \* | UKN02 | 2013 | Lisburn | Outer Belfast (2013) |
| \* | UKN14 | 2016 | Lisburn | Lisburn and Castlereagh (2016) |
| \* | UKM81 | 2016 | Lomond | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond (2016) |
| \* | UKM31 | 2013 | Lomond | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond (2013) |
| \* | UKN15 | 2016 | Mid Antrim | Mid and East Antrim (2016) |
| \* | UKN11 | 2016 | Mid Ulster | Mid Ulster (2016) |
| \* | UKM23 | 2013 | Midlothian | East Lothian and Midlothian (2013) |
| \* | UKM73 | 2016 | Midlothian | East Lothian and Midlothian (2016) |
| \* | UKN08 | 2016 | Mourne | Newry, Mourne and Down (2016) |
| \* | UKN04 | 2013 | Moyle | North of Northern Ireland (2013) |
| \* | UKN08 | 2016 | Newry | Newry, Mourne and Down (2016) |
| \* | UKN02 | 2013 | Newtownabbey | Outer Belfast (2013) |
| \* | UKN13 | 2016 | Newtownabbey | Antrim and Newtownabbey (2016) |
| \* | UKM33 | 2013 | North Ayrshire mainland | East Ayrshire and North Ayrshire mainland (2013) |
| \* | UKM93 | 2016 | North Ayrshire mainland | East Ayrshire and North Ayrshire mainland (2016) |
| \* | UKN02 | 2013 | North Down | Outer Belfast (2013) |
| \* | UKN09 | 2016 | North Down | Ards and North Down (2016) |
| \* | UKM36 | 2013 | North Lanarkshire | North Lanarkshire (2013) |
| \* | UKM84 | 2016 | North Lanarkshire | North Lanarkshire (2016) |
| \* | UKN04 | 2013 | North of Northern Ireland | North of Northern Ireland (2013) |
| \* | UKN16 | 2016 | Omagh | Fermanagh and Omagh (2016) |
| \* | UKN02 | 2013 | Outer Belfast | Outer Belfast (2013) |
| \* | UKM77 | 2016 | Perth | Perth and Kinross and Stirling (2016) |
| \* | UKM27 | 2013 | Perth | Perth & Kinross and Stirling (2013) |
| \* | UKM35 | 2013 | Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire (2013) |
| \* | UKM83 | 2016 | Renfrewshire | Inverclyde, East Renfrewshire and Renfrewshire (2016) |
| \* | UKM24 | 2013 | Scottish Borders | Scottish Borders (2013) |
| \* | UKM91 | 2016 | Scottish Borders | Scottish Borders (2016) |
| \* | UKM37 | 2013 | South Ayrshire | South Ayrshire (2013) |
| \* | UKM94 | 2016 | South Ayrshire | South Ayrshire (2016) |
| \* | UKM38 | 2013 | South Lanarkshire | South Lanarkshire (2013) |
| \* | UKM95 | 2016 | South Lanarkshire | South Lanarkshire (2016) |
| \* | UKN05 | 2013 | South of Northern Ireland | West and South of Northern Ireland (2013) |
| \* | UKM77 | 2016 | Stirling | Perth and Kinross and Stirling (2016) |
| \* | UKM27 | 2013 | Stirling | Perth & Kinross and Stirling (2013) |
| \* | UKN10 | 2016 | Strabane | Derry City and Strabane (2016) |
| \* | UKN04 | 2013 | Strabane | North of Northern Ireland (2013) |
| \* | UKN05 | 2013 | Strabane | West and South of Northern Ireland (2013) |
| \* | UKM31 | 2013 | West Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond (2013) |
| \* | UKM81 | 2016 | West Dunbartonshire | East Dunbartonshire, West Dunbartonshire and Helensburgh and Lomond (2016) |
| \* | UKM78 | 2016 | West Lothian | West Lothian (2016) |
| \* | UKM28 | 2013 | West Lothian | West Lothian (2013) |
| \* | UKN05 | 2013 | West Northern | West and South of Northern Ireland (2013) |

## Final Mapping of 2013 -> 2016 Data

Scanning these difference produces the following changed mappings:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Region Name | 2016 |  | 2013 | Region Name |
| ANGUS AND DUNDEE CITY | UKM71 | -> | UKM21 | ANGUS AND DUNDEE CITY |
| CLACKMANNANSHIRE AND FIFE | UKM72 | -> | UKM22 | CLACKMANNANSHIRE AND FIFE |
| EAST LOTHIAN AND MIDLOTHIAN | UKM73 | -> | UKM23 | EAST LOTHIAN AND MIDLOTHIAN |
| CITY OF EDINBURGH | UKM75 | -> | UKM25 | EDINBURGH, CITY OF |
| FALKIRK | UKM76 | -> | UKM26 | FALKIRK |
| PERTH AND KINROSS AND STIRLING | UKM77 | -> | UKM27 | PERTH & KINROSS AND STIRLING |
| WEST LOTHIAN | UKM78 | -> | UKM28 | WEST LOTHIAN |
| EAST DUNBARTONSHIRE, WEST DUNBARTONSHIRE AND HELENSBURGH AND LOMOND | UKM81 | -> | UKM31 | EAST DUNBARTONSHIRE, WEST DUNBARTONSHIRE AND HELENSBURGH & LOMOND |
| GLASGOW CITY | UKM82 | -> | UKM34 | GLASGOW CITY |
| INVERCLYDE, EAST RENFREWSHIRE AND RENFREWSHIRE | UKM83 | -> | UKM35 | INVERCLYDE, EAST RENFREWSHIRE AND RENFREWSHIRE |
| NORTH LANARKSHIRE | UKM84 | -> | UKM36 | NORTH LANARKSHIRE |
| SCOTTISH BORDERS | UKM91 | -> | UKM24 | SCOTTISH BORDERS |
| DUMFRIES AND GALLOWAY | UKM92 | -> | UKM32 | DUMFRIES & GALLOWAY |
| EAST AYRSHIRE AND NORTH AYRSHIRE MAINLAND | UKM93 | -> | UKM33 | EAST AYRSHIRE AND NORTH AYRSHIRE MAINLAND |
| SOUTH AYRSHIRE | UKM94 | -> | UKM37 | SOUTH AYRSHIRE |
| SOUTH LANARKSHIRE | UKM95 | -> | UKM38 | SOUTH LANARKSHIRE |
| BELFAST | UKN06 | -> | UKN01 | BELFAST |
| ARMAGH CITY, BANBRIDGE AND CRAIGAVON | UKN07 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| NEWRY, MOURNE AND DOWN | UKN08 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| ARDS AND NORTH DOWN | UKN09 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| DERRY CITY AND STRABANE | UKN10 | -> | UKN04 | NORTH OF NORTHERN IRELAND |
| MID ULSTER | UKN11 | -> | UKN05 | WEST AND SOUTH OF NORTHERN IRELAND |
| CAUSEWAY COAST AND GLENS | UKN12 | -> | UKN04 | NORTH OF NORTHERN IRELAND |
| ANTRIM AND NEWTOWNABBEY | UKN13 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| LISBURN AND CASTLEREAGH | UKN14 | -> | UKN02 | OUTER BELFAST |
| MID AND EAST ANTRIM | UKN15 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| FERMANAGH AND OMAGH | UKN16 | -> | UKN05 | WEST AND SOUTH OF NORTHERN IRELAND |

These final mappings are codified in Code for fnMapRegions, the output of which is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2016 Region Name | 2016 NUTS |  | 2013 NUTS | 2013 Region Name |
| HARTLEPOOL AND STOCKTON-ON-TEES | UKC11 | -> | UKC1 | TEES VALLEY AND DURHAM |
| SOUTH TEESSIDE | UKC12 | -> | UKC1 | TEES VALLEY AND DURHAM |
| DARLINGTON | UKC13 | -> | UKC1 | TEES VALLEY AND DURHAM |
| DURHAM CC | UKC14 | -> | UKC1 | TEES VALLEY AND DURHAM |
| NORTHUMBERLAND | UKC21 | -> | UKC2 | NORTHUMBERLAND AND TYNE AND WEAR |
| TYNESIDE | UKC22 | -> | UKC2 | NORTHUMBERLAND AND TYNE AND WEAR |
| SUNDERLAND | UKC23 | -> | UKC2 | NORTHUMBERLAND AND TYNE AND WEAR |
| WEST CUMBRIA | UKD11 | -> | UKD1 | CUMBRIA |
| EAST CUMBRIA | UKD12 | -> | UKD1 | CUMBRIA |
| MANCHESTER | UKD33 | -> | UKD3 | GREATER MANCHESTER |
| GREATER MANCHESTER SOUTH WEST | UKD34 | -> | UKD3 | GREATER MANCHESTER |
| GREATER MANCHESTER SOUTH EAST | UKD35 | -> | UKD3 | GREATER MANCHESTER |
| GREATER MANCHESTER NORTH WEST | UKD36 | -> | UKD3 | GREATER MANCHESTER |
| GREATER MANCHESTER NORTH EAST | UKD37 | -> | UKD3 | GREATER MANCHESTER |
| BLACKBURN WITH DARWEN | UKD41 | -> | UKD4 | LANCASHIRE |
| BLACKPOOL | UKD42 | -> | UKD4 | LANCASHIRE |
| LANCASTER AND WYRE | UKD44 | -> | UKD4 | LANCASHIRE |
| MID LANCASHIRE | UKD45 | -> | UKD4 | LANCASHIRE |
| EAST LANCASHIRE | UKD46 | -> | UKD4 | LANCASHIRE |
| CHORLEY AND WEST LANCASHIRE | UKD47 | -> | UKD4 | LANCASHIRE |
| WARRINGTON | UKD61 | -> | UKD6 | CHESHIRE |
| CHESHIRE EAST | UKD62 | -> | UKD6 | CHESHIRE |
| CHESHIRE WEST AND CHESTER | UKD63 | -> | UKD6 | CHESHIRE |
| EAST MERSEYSIDE | UKD71 | -> | UKD7 | MERSEYSIDE |
| LIVERPOOL | UKD72 | -> | UKD7 | MERSEYSIDE |
| SEFTON | UKD73 | -> | UKD7 | MERSEYSIDE |
| WIRRAL | UKD74 | -> | UKD7 | MERSEYSIDE |
| KINGSTON UPON HULL, CITY OF | UKE11 | -> | UKE1 | EAST YORKSHIRE AND NORTHERN LINCOLNSHIRE |
| EAST RIDING OF YORKSHIRE | UKE12 | -> | UKE1 | EAST YORKSHIRE AND NORTHERN LINCOLNSHIRE |
| NORTH AND NORTH EAST LINCOLNSHIRE | UKE13 | -> | UKE1 | EAST YORKSHIRE AND NORTHERN LINCOLNSHIRE |
| YORK | UKE21 | -> | UKE2 | NORTH YORKSHIRE |
| NORTH YORKSHIRE CC | UKE22 | -> | UKE2 | NORTH YORKSHIRE |
| BARNSLEY, DONCASTER AND ROTHERHAM | UKE31 | -> | UKE3 | SOUTH YORKSHIRE |
| SHEFFIELD | UKE32 | -> | UKE3 | SOUTH YORKSHIRE |
| BRADFORD | UKE41 | -> | UKE4 | WEST YORKSHIRE |
| LEEDS | UKE42 | -> | UKE4 | WEST YORKSHIRE |
| CALDERDALE AND KIRKLEES | UKE44 | -> | UKE4 | WEST YORKSHIRE |
| WAKEFIELD | UKE45 | -> | UKE4 | WEST YORKSHIRE |
| DERBY | UKF11 | -> | UKF1 | DERBYSHIRE AND NOTTINGHAMSHIRE |
| EAST DERBYSHIRE | UKF12 | -> | UKF1 | DERBYSHIRE AND NOTTINGHAMSHIRE |
| SOUTH AND WEST DERBYSHIRE | UKF13 | -> | UKF1 | DERBYSHIRE AND NOTTINGHAMSHIRE |
| NOTTINGHAM | UKF14 | -> | UKF1 | DERBYSHIRE AND NOTTINGHAMSHIRE |
| NORTH NOTTINGHAMSHIRE | UKF15 | -> | UKF1 | DERBYSHIRE AND NOTTINGHAMSHIRE |
| SOUTH NOTTINGHAMSHIRE | UKF16 | -> | UKF1 | DERBYSHIRE AND NOTTINGHAMSHIRE |
| LEICESTER | UKF21 | -> | UKF2 | LEICESTERSHIRE, RUTLAND AND NORTHAMPTONSHIRE |
| LEICESTERSHIRE CC AND RUTLAND | UKF22 | -> | UKF2 | LEICESTERSHIRE, RUTLAND AND NORTHAMPTONSHIRE |
| WEST NORTHAMPTONSHIRE | UKF24 | -> | UKF2 | LEICESTERSHIRE, RUTLAND AND NORTHAMPTONSHIRE |
| NORTH NORTHAMPTONSHIRE | UKF25 | -> | UKF2 | LEICESTERSHIRE, RUTLAND AND NORTHAMPTONSHIRE |
| LINCOLNSHIRE | UKF30 | -> | UKF3 | LINCOLNSHIRE |
| HEREFORDSHIRE, COUNTY OF | UKG11 | -> | UKG1 | HEREFORDSHIRE, WORCESTERSHIRE AND WARWICKSHIRE |
| WORCESTERSHIRE | UKG12 | -> | UKG1 | HEREFORDSHIRE, WORCESTERSHIRE AND WARWICKSHIRE |
| WARWICKSHIRE | UKG13 | -> | UKG1 | HEREFORDSHIRE, WORCESTERSHIRE AND WARWICKSHIRE |
| TELFORD AND WREKIN | UKG21 | -> | UKG2 | SHROPSHIRE AND STAFFORDSHIRE |
| SHROPSHIRE CC | UKG22 | -> | UKG2 | SHROPSHIRE AND STAFFORDSHIRE |
| STOKE-ON-TRENT | UKG23 | -> | UKG2 | SHROPSHIRE AND STAFFORDSHIRE |
| STAFFORDSHIRE CC | UKG24 | -> | UKG2 | SHROPSHIRE AND STAFFORDSHIRE |
| BIRMINGHAM | UKG31 | -> | UKG3 | WEST MIDLANDS |
| SOLIHULL | UKG32 | -> | UKG3 | WEST MIDLANDS |
| COVENTRY | UKG33 | -> | UKG3 | WEST MIDLANDS |
| DUDLEY | UKG36 | -> | UKG3 | WEST MIDLANDS |
| SANDWELL | UKG37 | -> | UKG3 | WEST MIDLANDS |
| WALSALL | UKG38 | -> | UKG3 | WEST MIDLANDS |
| WOLVERHAMPTON | UKG39 | -> | UKG3 | WEST MIDLANDS |
| PETERBOROUGH | UKH11 | -> | UKH1 | EAST ANGLIA |
| CAMBRIDGESHIRE CC | UKH12 | -> | UKH1 | EAST ANGLIA |
| SUFFOLK | UKH14 | -> | UKH1 | EAST ANGLIA |
| NORWICH AND EAST NORFOLK | UKH15 | -> | UKH1 | EAST ANGLIA |
| NORTH AND WEST NORFOLK | UKH16 | -> | UKH1 | EAST ANGLIA |
| BRECKLAND AND SOUTH NORFOLK | UKH17 | -> | UKH1 | EAST ANGLIA |
| LUTON | UKH21 | -> | UKH2 | BEDFORDSHIRE AND HERTFORDSHIRE |
| HERTFORDSHIRE | UKH23 | -> | UKH2 | BEDFORDSHIRE AND HERTFORDSHIRE |
| BEDFORD | UKH24 | -> | UKH2 | BEDFORDSHIRE AND HERTFORDSHIRE |
| CENTRAL BEDFORDSHIRE | UKH25 | -> | UKH2 | BEDFORDSHIRE AND HERTFORDSHIRE |
| SOUTHEND-ON-SEA | UKH31 | -> | UKH3 | ESSEX |
| THURROCK | UKH32 | -> | UKH3 | ESSEX |
| ESSEX HAVEN GATEWAY | UKH34 | -> | UKH3 | ESSEX |
| WEST ESSEX | UKH35 | -> | UKH3 | ESSEX |
| HEART OF ESSEX | UKH36 | -> | UKH3 | ESSEX |
| ESSEX THAMES GATEWAY | UKH37 | -> | UKH3 | ESSEX |
| CAMDEN AND CITY OF LONDON | UKI31 | -> | UKI3 | INNER LONDON - WEST |
| WESTMINSTER | UKI32 | -> | UKI3 | INNER LONDON - WEST |
| KENSINGTON & CHELSEA AND HAMMERSMITH & FULHAM | UKI33 | -> | UKI3 | INNER LONDON - WEST |
| WANDSWORTH | UKI34 | -> | UKI3 | INNER LONDON - WEST |
| HACKNEY AND NEWHAM | UKI41 | -> | UKI4 | INNER LONDON - EAST |
| TOWER HAMLETS | UKI42 | -> | UKI4 | INNER LONDON - EAST |
| HARINGEY AND ISLINGTON | UKI43 | -> | UKI4 | INNER LONDON - EAST |
| LEWISHAM AND SOUTHWARK | UKI44 | -> | UKI4 | INNER LONDON - EAST |
| LAMBETH | UKI45 | -> | UKI4 | INNER LONDON - EAST |
| BEXLEY AND GREENWICH | UKI51 | -> | UKI5 | OUTER LONDON - EAST AND NORTH EAST |
| BARKING & DAGENHAM AND HAVERING | UKI52 | -> | UKI5 | OUTER LONDON - EAST AND NORTH EAST |
| REDBRIDGE AND WALTHAM FOREST | UKI53 | -> | UKI5 | OUTER LONDON - EAST AND NORTH EAST |
| ENFIELD | UKI54 | -> | UKI5 | OUTER LONDON - EAST AND NORTH EAST |
| BROMLEY | UKI61 | -> | UKI6 | OUTER LONDON - SOUTH |
| CROYDON | UKI62 | -> | UKI6 | OUTER LONDON - SOUTH |
| MERTON, KINGSTON UPON THAMES AND SUTTON | UKI63 | -> | UKI6 | OUTER LONDON - SOUTH |
| BARNET | UKI71 | -> | UKI7 | OUTER LONDON - WEST AND NORTH WEST |
| BRENT | UKI72 | -> | UKI7 | OUTER LONDON - WEST AND NORTH WEST |
| EALING | UKI73 | -> | UKI7 | OUTER LONDON - WEST AND NORTH WEST |
| HARROW AND HILLINGDON | UKI74 | -> | UKI7 | OUTER LONDON - WEST AND NORTH WEST |
| HOUNSLOW AND RICHMOND UPON THAMES | UKI75 | -> | UKI7 | OUTER LONDON - WEST AND NORTH WEST |
| BERKSHIRE | UKJ11 | -> | UKJ1 | BERKSHIRE, BUCKINGHAMSHIRE AND OXFORDSHIRE |
| MILTON KEYNES | UKJ12 | -> | UKJ1 | BERKSHIRE, BUCKINGHAMSHIRE AND OXFORDSHIRE |
| BUCKINGHAMSHIRE CC | UKJ13 | -> | UKJ1 | BERKSHIRE, BUCKINGHAMSHIRE AND OXFORDSHIRE |
| OXFORDSHIRE | UKJ14 | -> | UKJ1 | BERKSHIRE, BUCKINGHAMSHIRE AND OXFORDSHIRE |
| BRIGHTON AND HOVE | UKJ21 | -> | UKJ2 | SURREY, EAST AND WEST SUSSEX |
| EAST SUSSEX CC | UKJ22 | -> | UKJ2 | SURREY, EAST AND WEST SUSSEX |
| WEST SURREY | UKJ25 | -> | UKJ2 | SURREY, EAST AND WEST SUSSEX |
| EAST SURREY | UKJ26 | -> | UKJ2 | SURREY, EAST AND WEST SUSSEX |
| WEST SUSSEX (SOUTH WEST) | UKJ27 | -> | UKJ2 | SURREY, EAST AND WEST SUSSEX |
| WEST SUSSEX (NORTH EAST) | UKJ28 | -> | UKJ2 | SURREY, EAST AND WEST SUSSEX |
| PORTSMOUTH | UKJ31 | -> | UKJ3 | HAMPSHIRE AND ISLE OF WIGHT |
| SOUTHAMPTON | UKJ32 | -> | UKJ3 | HAMPSHIRE AND ISLE OF WIGHT |
| ISLE OF WIGHT | UKJ34 | -> | UKJ3 | HAMPSHIRE AND ISLE OF WIGHT |
| SOUTH HAMPSHIRE | UKJ35 | -> | UKJ3 | HAMPSHIRE AND ISLE OF WIGHT |
| CENTRAL HAMPSHIRE | UKJ36 | -> | UKJ3 | HAMPSHIRE AND ISLE OF WIGHT |
| NORTH HAMPSHIRE | UKJ37 | -> | UKJ3 | HAMPSHIRE AND ISLE OF WIGHT |
| MEDWAY | UKJ41 | -> | UKJ4 | KENT |
| KENT THAMES GATEWAY | UKJ43 | -> | UKJ4 | KENT |
| EAST KENT | UKJ44 | -> | UKJ4 | KENT |
| MID KENT | UKJ45 | -> | UKJ4 | KENT |
| WEST KENT | UKJ46 | -> | UKJ4 | KENT |
| BRISTOL, CITY OF | UKK11 | -> | UKK1 | GLOUCESTERSHIRE, WILTSHIRE AND BRISTOL/BATH AREA |
| BATH AND NORTH EAST SOMERSET, NORTH SOMERSET AND SOUTH GLOUCESTERSHIRE | UKK12 | -> | UKK1 | GLOUCESTERSHIRE, WILTSHIRE AND BRISTOL/BATH AREA |
| GLOUCESTERSHIRE | UKK13 | -> | UKK1 | GLOUCESTERSHIRE, WILTSHIRE AND BRISTOL/BATH AREA |
| SWINDON | UKK14 | -> | UKK1 | GLOUCESTERSHIRE, WILTSHIRE AND BRISTOL/BATH AREA |
| WILTSHIRE | UKK15 | -> | UKK1 | GLOUCESTERSHIRE, WILTSHIRE AND BRISTOL/BATH AREA |
| BOURNEMOUTH AND POOLE | UKK21 | -> | UKK2 | DORSET AND SOMERSET |
| DORSET CC | UKK22 | -> | UKK2 | DORSET AND SOMERSET |
| SOMERSET | UKK23 | -> | UKK2 | DORSET AND SOMERSET |
| CORNWALL AND ISLES OF SCILLY | UKK30 | -> | UKK3 | CORNWALL AND ISLES OF SCILLY |
| PLYMOUTH | UKK41 | -> | UKK4 | DEVON |
| TORBAY | UKK42 | -> | UKK4 | DEVON |
| DEVON CC | UKK43 | -> | UKK4 | DEVON |
| ISLE OF ANGLESEY | UKL11 | -> | UKL11 | ISLE OF ANGLESEY |
| GWYNEDD | UKL12 | -> | UKL12 | GWYNEDD |
| CONWY AND DENBIGHSHIRE | UKL13 | -> | UKL13 | CONWY AND DENBIGHSHIRE |
| SOUTH WEST WALES | UKL14 | -> | UKL14 | SOUTH WEST WALES |
| CENTRAL VALLEYS | UKL15 | -> | UKL15 | CENTRAL VALLEYS |
| GWENT VALLEYS | UKL16 | -> | UKL16 | GWENT VALLEYS |
| BRIDGEND AND NEATH PORT TALBOT | UKL17 | -> | UKL17 | BRIDGEND AND NEATH PORT TALBOT |
| SWANSEA | UKL18 | -> | UKL18 | SWANSEA |
| MONMOUTHSHIRE AND NEWPORT | UKL21 | -> | UKL21 | MONMOUTHSHIRE AND NEWPORT |
| CARDIFF AND VALE OF GLAMORGAN | UKL22 | -> | UKL22 | CARDIFF AND VALE OF GLAMORGAN |
| FLINTSHIRE AND WREXHAM | UKL23 | -> | UKL23 | FLINTSHIRE AND WREXHAM |
| POWYS | UKL24 | -> | UKL24 | POWYS |
| ANGUS AND DUNDEE CITY | UKM71 | -> | UKM21 | ANGUS AND DUNDEE CITY |
| CLACKMANNANSHIRE AND FIFE | UKM72 | -> | UKM22 | CLACKMANNANSHIRE AND FIFE |
| EAST LOTHIAN AND MIDLOTHIAN | UKM73 | -> | UKM23 | EAST LOTHIAN AND MIDLOTHIAN |
| CITY OF EDINBURGH | UKM75 | -> | UKM25 | EDINBURGH, CITY OF |
| FALKIRK | UKM76 | -> | UKM26 | FALKIRK |
| PERTH AND KINROSS AND STIRLING | UKM77 | -> | UKM27 | PERTH & KINROSS AND STIRLING |
| WEST LOTHIAN | UKM78 | -> | UKM28 | WEST LOTHIAN |
| ABERDEEN CITY AND ABERDEENSHIRE | UKM50 | -> |  |  |
| CAITHNESS AND SUTHERLAND AND ROSS AND CROMARTY | UKM61 | -> | UKM61 | CAITHNESS & SUTHERLAND AND ROSS & CROMARTY |
| INVERNESS AND NAIRN AND MORAY, BADENOCH AND STRATHSPEY | UKM62 | -> | UKM62 | INVERNESS & NAIRN AND MORAY, BADENOCH & STRATHSPEY |
| LOCHABER, SKYE AND LOCHALSH, ARRAN AND CUMBRAE AND ARGYLL AND BUTE | UKM63 | -> | UKM63 | LOCHABER, SKYE & LOCHALSH, ARRAN & CUMBRAE AND ARGYLL & BUTE |
| EILEAN SIAR (WESTERN ISLES) | UKM64 | -> | UKM64 | EILEAN SIAR (WESTERN ISLES) |
| ORKNEY ISLANDS | UKM65 | -> | UKM65 | ORKNEY ISLANDS |
| SHETLAND ISLANDS | UKM66 | -> | UKM66 | SHETLAND ISLANDS |
| EAST DUNBARTONSHIRE, WEST DUNBARTONSHIRE AND HELENSBURGH AND LOMOND | UKM81 | -> | UKM31 | EAST DUNBARTONSHIRE, WEST DUNBARTONSHIRE AND HELENSBURGH & LOMOND |
| GLASGOW CITY | UKM82 | -> | UKM34 | GLASGOW CITY |
| INVERCLYDE, EAST RENFREWSHIRE AND RENFREWSHIRE | UKM83 | -> | UKM35 | INVERCLYDE, EAST RENFREWSHIRE AND RENFREWSHIRE |
| NORTH LANARKSHIRE | UKM84 | -> | UKM36 | NORTH LANARKSHIRE |
| SCOTTISH BORDERS | UKM91 | -> | UKM24 | SCOTTISH BORDERS |
| DUMFRIES AND GALLOWAY | UKM92 | -> | UKM32 | DUMFRIES & GALLOWAY |
| EAST AYRSHIRE AND NORTH AYRSHIRE MAINLAND | UKM93 | -> | UKM33 | EAST AYRSHIRE AND NORTH AYRSHIRE MAINLAND |
| SOUTH AYRSHIRE | UKM94 | -> | UKM37 | SOUTH AYRSHIRE |
| SOUTH LANARKSHIRE | UKM95 | -> | UKM38 | SOUTH LANARKSHIRE |
| BELFAST | UKN06 | -> | UKN01 | BELFAST |
| ARMAGH CITY, BANBRIDGE AND CRAIGAVON | UKN07 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| NEWRY, MOURNE AND DOWN | UKN08 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| ARDS AND NORTH DOWN | UKN09 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| DERRY CITY AND STRABANE | UKN10 | -> | UKN04 | NORTH OF NORTHERN IRELAND |
| MID ULSTER | UKN11 | -> | UKN05 | WEST AND SOUTH OF NORTHERN IRELAND |
| CAUSEWAY COAST AND GLENS | UKN12 | -> | UKN04 | NORTH OF NORTHERN IRELAND |
| ANTRIM AND NEWTOWNABBEY | UKN13 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| LISBURN AND CASTLEREAGH | UKN14 | -> | UKN02 | OUTER BELFAST |
| MID AND EAST ANTRIM | UKN15 | -> | UKN03 | EAST OF NORTHERN IRELAND |
| FERMANAGH AND OMAGH | UKN16 | -> | UKN05 | WEST AND SOUTH OF NORTHERN IRELAND |

# Appendix C – Technical support

## Postcode structure

A great description and access to postcode-related code can be found at:

[Programmers guid to UK postcodes](https://www.getthedata.com/postcode)

A screenshot of a cell phone

Description automatically generated

## Supporting Code

This function, to be added to the DB, creates this data and will allow mapping tables to be constructed.

### Chunking Postcodes

This shell script will process the source address data files into chunks. The output files are based on the postcode locator, for each file, so there will be some 3000 output files.

There are options to compress (tar, gzip and zip), to keep compressed and raw files and to produce CSV files with headers (csv) or without (dat).

The dat files are to be used to dump the data straight into the database. The CSV files are be used to upsert each row into the database. The compression enables easy distribution of the files.

Without any parameters the script will chunk each file to a dat file without compression.

#! /bin/sh  
echo Chunking postcode files  
zip=0  
gzip=0  
tar=0  
csv=0  
keep=0  
ext=dat

if [[ -n "$1" ]]; then  
 while [ -n "$1" ]; do  
 case "$1" in  
 -zip)  
 zip=1  
 tar=0  
 gzip=0  
 ;;  
 -tar)  
 tar=1  
 zip=0  
 gzip=0  
 ;;  
 -gz)  
 tar=0  
 zip=0  
 gzip=1  
 ;;  
 -csv)  
 csv=1  
 ext=csv  
 ;;  
 -keep)  
 keep=1;;  
 esac  
 shift  
 done  
else  
 echo "You can pass in -zip|tar [-keep] and -csv options."  
 echo "\t-csv will add the OS\_ADDRESS headers to each file. Use this to data-cleanse the os\_address table"  
 echo "\t-gz will compress each output file using gzip"  
 echo "\t-zip will compress each output file using zip"  
 echo "\t-tar will compress to produce .tar.gz files"  
 echo "\t-keep will produce zip and dat/csv outputs"  
 echo Processing files without headers and no final compression  
fi  
if [ $csv = 1 ]; then  
 echo Creating CSV files  
else  
 echo Creating DAT files  
fi  
  
if [ $zip = 1 ]; then  
 echo Creating zips  
 if [ $keep = 1 ]; then  
 if [ $csv = 1 ]; then  
 echo "Keeping CSV files as well as the zip file"  
 else  
 echo "Keeping DAT files as well as the zip file"  
 fi  
 fi  
elif [ $tar = 1 ]; then  
 echo Creating tars  
 if [ $keep = 1 ]; then  
 if [ $csv = 1 ]; then  
 echo "Keeping CSV files as well as the tar.gz file"  
 else  
 echo "Keeping DAT files as well as the tar.gz file"  
 fi  
 fi  
elif [ $gzip = 1 ]; then  
 echo Creating tars  
 if [ $keep = 1 ]; then  
 if [ $csv = 1 ]; then  
 echo "Keeping CSV files as well as the tar.gz file"  
 else  
 echo "Keeping DAT files as well as the tar.gz file"  
 fi  
 fi  
else  
 echo Creating uncompressed files  
fi  
  
for file in AddressBasePlus\_FULL\*.csv; do  
 # shellcheck disable=SC2039  
 if [[ -f "$file" ]]; then  
 # process the file with name in "$file" here  
 if [[ "$file" == \*".csv"\* ]]; then  
 pname="p\_${file%.\*}"  
 finished\_name="dataPostcode\_${file:21:14}"  
 echo Parsing "$file -> $finished\_name"\*.csv  
  
 [[ -f "$pname.csv" ]] && { echo csvquote done for $file; } || {  
 echo csvquote on $file  
 csvquote $file >"$pname.csv"  
 }  
 echo Splitting "$pname".csv  
 awk -F "," '{match($66, /([A-Z][A-Z]{0,1})/, outcode); print > (substr(FILENAME,0,length(FILENAME)-4)"-"outcode[0]".awk")}' "$pname.csv"  
 echo Producing final output for $file  
  
 for awkfile in "$pname"\*.awk; do  
 awksuffix=${awkfile:38:2}  
 if [[ "${awkfile:39:1}" = "." ]]; then  
 awksuffix=${awkfile:38:1}  
 fi  
 echo "${finished\_name}\_${awksuffix}.${ext}"  
 [[ $csv = 1 ]] && echo "UPRN,UDPRN,CHANGE\_TYPE,STATE,STATE\_DATE,CLASS,PARENT\_UPRN,X\_COORDINATE,Y\_COORDINATE,LATITUDE,LONGITUDE,RPC,LOCAL\_CUSTODIAN\_CODE,COUNTRY,LA\_START\_DATE,LAST\_UPDATE\_DATE,ENTRY\_DATE,RM\_ORGANISATION\_NAME,LA\_ORGANISATION,DEPARTMENT\_NAME,LEGAL\_NAME,SUB\_BUILDING\_NAME,BUILDING\_NAME,BUILDING\_NUMBER,SAO\_START\_NUMBER,SAO\_START\_SUFFIX,SAO\_END\_NUMBER,SAO\_END\_SUFFIX,SAO\_TEXT,ALT\_LANGUAGE\_SAO\_TEXT,PAO\_START\_NUMBER,PAO\_START\_SUFFIX,PAO\_END\_NUMBER,PAO\_END\_SUFFIX,PAO\_TEXT,ALT\_LANGUAGE\_PAO\_TEXT,USRN,USRN\_MATCH\_INDICATOR,AREA\_NAME,LEVEL,OFFICIAL\_FLAG,OS\_ADDRESS\_TOID,OS\_ADDRESS\_TOID\_VERSION,OS\_ROADLINK\_TOID,OS\_ROADLINK\_TOID\_VERSION,OS\_TOPO\_TOID,OS\_TOPO\_TOID\_VERSION,VOA\_CT\_RECORD,VOA\_NDR\_RECORD,STREET\_DESCRIPTION,ALT\_LANGUAGE\_STREET\_DESCRIPTION,DEPENDENT\_THOROUGHFARE,THOROUGHFARE,WELSH\_DEPENDENT\_THOROUGHFARE,WELSH\_THOROUGHFARE,DOUBLE\_DEPENDENT\_LOCALITY,DEPENDENT\_LOCALITY,LOCALITY,WELSH\_DEPENDENT\_LOCALITY,WELSH\_DOUBLE\_DEPENDENT\_LOCALITY,TOWN\_NAME,ADMINISTRATIVE\_AREA,POST\_TOWN,WELSH\_POST\_TOWN,POSTCODE,POSTCODE\_LOCATOR,POSTCODE\_TYPE,DELIVERY\_POINT\_SUFFIX,ADDRESSBASE\_POSTAL,PO\_BOX\_NUMBER,WARD\_CODE,PARISH\_CODE,RM\_START\_DATE,MULTI\_OCC\_COUNT,VOA\_NDR\_P\_DESC\_CODE,VOA\_NDR\_SCAT\_CODE,ALT\_LANGUAGE" > "${finished\_name}\_${awksuffix}.${ext}"  
 csvquote -u "$awkfile" >> "${finished\_name}\_${awksuffix}.${ext}"  
 rm "$awkfile"  
 if [[ $zip = 1 ]]; then  
 zip "${finished\_name}\_${awksuffix}.${ext}.zip" "${finished\_name}\_${awksuffix}.${ext}";  
 fi  
 if [[ $gzip = 1 ]]; then  
 gzip -k -9 -f "${finished\_name}\_${awksuffix}.${ext}";  
 fi  
 if [[ $tar = 1 ]]; then  
 tar -zc --options "gzip:compression-level=9" -f "${finished\_name}\_${awksuffix}.${ext}.tar.gz" "${finished\_name}\_${awksuffix}.${ext}";  
 fi  
 [[ $keep -ne 1 && ($tar = 1 || $zip = 1 || $gzip = 1) ]] && rm "${finished\_name}\_${awksuffix}.${ext}"  
 done  
  
 rm $pname.csv  
 fi  
 fi  
 echo Done  
done

### Split Regions

This SQL function will take region info (from fm\_regions, or nuts\_regions) to produce a list of NUTS3 codes and regions, by regional component, if there are any. This will enable the quality control and generation of mapping data.

It is used as so:

SELECT code, fnsplitregions(name::TEXT) AS regioncomponent, name

FROM nuts\_regions

ORDER BY code, regioncomponent;

Output from this is found in: 2013 Breakdown and 2016 Breakdown.

It can used as so:

SELECT case WHEN onr."NUTS318CD" NOT IN (SELECT code FROM nuts\_regions) THEN '\*' ELSE '' END AS N,

onr."NUTS318CD" AS NUTS3, 2016 AS Year, fnsplitregions(onr."NUTS318NM"::text) AS Regioncomponent,

onr."NUTS318NM" AS "Region name"

FROM ons\_nuts3\_regions onr

ORDER by N desc, regioncomponent;

**To produce the table in: Differences between 2013/2016 Data**

SELECT case WHEN code NOT IN (SELECT onr."NUTS318CD" FROM ons\_nuts3\_regions onr) THEN '\*' ELSE '' END AS N,

code AS NUTS3, 2013 AS Year, fnsplitregions(name::text) AS Regioncomponent, name AS "Region name"

FROM nuts\_regions

UNION

#### Code for fnSplitRegions

CREATE FUNCTION fnsplitregions(column\_text TEXT)

RETURNS TABLE

(

word TEXT

)

LANGUAGE plpgsql

AS

$$

DECLARE

clean\_data VARCHAR DEFAULT '';

BEGIN

SELECT replace(column\_text, ', City of', ' City of')

INTO clean\_data;

SELECT replace(clean\_data, ', County of', ' County of')

INTO clean\_data;

RAISE NOTICE '%', clean\_data;

IF position('South and South West ' IN clean\_data) = 1 OR

position('North and North East ' IN clean\_data) = 1 OR

position('South and South West ' IN clean\_data) = 1 OR

position('West and South of ' IN clean\_data) = 1 THEN

RAISE NOTICE 'regex2 %', clean\_data;

SELECT regexp\_replace(clean\_data, '^(\w+)\s?(and)\s?(\w+\s?\w\*)\s?(\w\*)',

'\1 \4 & \3 \4')

INTO clean\_data;

END IF;

IF position('North and North ' IN clean\_data) = 1 OR

position('West and North ' IN clean\_data) = 1 OR

position('North and West ' IN clean\_data) = 1 OR

position('South and West ' IN clean\_data) = 1 OR

position('Mid and East ' IN clean\_data) = 1 THEN

RAISE NOTICE 'regex %', clean\_data;

SELECT regexp\_replace(clean\_data, '^(\w+)\s?(and)\s?(\w+)\s?(\w+)',

'\1 \4 & \3 \4')

INTO clean\_data;

END IF;

SELECT replace(clean\_data, '&', 'and')

INTO clean\_data;

SELECT replace(clean\_data, ',', ' and')

INTO clean\_data;

SELECT replace(clean\_data, 'Cc', 'CC')

INTO clean\_data;

SELECT replace(clean\_data, ' City of', ', City of')

INTO clean\_data;

SELECT replace(clean\_data, ' County of', ', County\_of')

INTO clean\_data;

RETURN QUERY

SELECT regexp\_split\_to\_table(clean\_data, E' and ');

END

$$;

### Map Regions

This function is used for 2 purposes, to produce the content of the table in: Final Mapping of 2013 -> 2016 Data.

The second purpose is to conduct mappings from Eurostat region codes and our existing region codes. This means that any age of postcode correspondence data can be imported without damaging existing code. If the business change their region codes and/or resolutions, this mappings in this function will need to change.

To produce content for NUTS\_5.csv:

*select* eur.postcode, *CASE WHEN* eur.code ~ 'UKN.\*' *then fnmapregionbyoutcode*(eur.postcode) *ELSE fnmapregions*(eur.code) *END as* code  
 *from* eurostat\_nuts\_regions eur  
 *left outer join* postcodes\_nuts\_regions pnr  
 *on* pnr.postcode = eur.postcode  
 *where* pnr.postcode *is null  
 order by* eur.code;

#### Code for fnMapRegions

*CREATE FUNCTION fnmapregions*(nuts2016 *CHARACTER VARYING*) *RETURNS CHARACTER VARYING  
 LANGUAGE* plpgsql  
*AS*$$  
*DECLARE* lookups *CHAR*(5)[][] := *ARRAY* [  
 ['UKC11','UKC1'],['UKC12','UKC1'],['UKC13','UKC1'],['UKC14','UKC1'],  
 ['UKC21','UKC2'],['UKC22','UKC2'],['UKC23','UKC2'],['UKD11','UKD1'],  
 ['UKD12','UKD1'],['UKD33','UKD3'],['UKD34','UKD3'],['UKD35','UKD3'],  
 ['UKD36','UKD3'],['UKD37','UKD3'],['UKD41','UKD4'],['UKD42','UKD4'],  
 ['UKD44','UKD4'],['UKD45','UKD4'],['UKD46','UKD4'],['UKD47','UKD4'],  
 ['UKD61','UKD6'],['UKD62','UKD6'],['UKD63','UKD6'],['UKD71','UKD7'],  
 ['UKD72','UKD7'],['UKD73','UKD7'],['UKD74','UKD7'],['UKE11','UKE1'],  
 ['UKE12','UKE1'],['UKE13','UKE1'],['UKE21','UKE2'],['UKE22','UKE2'],  
 ['UKE31','UKE3'],['UKE32','UKE3'],['UKE41','UKE4'],['UKE42','UKE4'],  
 ['UKE44','UKE4'],['UKE45','UKE4'],['UKF11','UKF1'],['UKF12','UKF1'],  
 ['UKF13','UKF1'],['UKF14','UKF1'],['UKF15','UKF1'],['UKF16','UKF1'],  
 ['UKF21','UKF2'],['UKF22','UKF2'],['UKF24','UKF2'],['UKF25','UKF2'],  
 ['UKF30','UKF3'],['UKG11','UKG1'],['UKG12','UKG1'],['UKG13','UKG1'],  
 ['UKG21','UKG2'],['UKG22','UKG2'],['UKG23','UKG2'],['UKG24','UKG2'],  
 ['UKG31','UKG3'],['UKG32','UKG3'],['UKG33','UKG3'],['UKG36','UKG3'],  
 ['UKG37','UKG3'],['UKG38','UKG3'],['UKG39','UKG3'],['UKH11','UKH1'],  
 ['UKH12','UKH1'],['UKH14','UKH1'],['UKH15','UKH1'],['UKH16','UKH1'],  
 ['UKH17','UKH1'],['UKH21','UKH2'],['UKH23','UKH2'],['UKH24','UKH2'],  
 ['UKH25','UKH2'],['UKH31','UKH3'],['UKH32','UKH3'],['UKH34','UKH3'],  
 ['UKH35','UKH3'],['UKH36','UKH3'],['UKH37','UKH3'],['UKI31','UKI3'],  
 ['UKI32','UKI3'],['UKI33','UKI3'],['UKI34','UKI3'],['UKI41','UKI4'],  
 ['UKI42','UKI4'],['UKI43','UKI4'],['UKI44','UKI4'],['UKI45','UKI4'],  
 ['UKI51','UKI5'],['UKI52','UKI5'],['UKI53','UKI5'],['UKI54','UKI5'],  
 ['UKI61','UKI6'],['UKI62','UKI6'],['UKI63','UKI6'],['UKI71','UKI7'],  
 ['UKI72','UKI7'],['UKI73','UKI7'],['UKI74','UKI7'],['UKI75','UKI7'],  
 ['UKJ11','UKJ1'],['UKJ12','UKJ1'],['UKJ13','UKJ1'],['UKJ14','UKJ1'],  
 ['UKJ21','UKJ2'],['UKJ22','UKJ2'],['UKJ25','UKJ2'],['UKJ26','UKJ2'],  
 ['UKJ27','UKJ2'],['UKJ28','UKJ2'],['UKJ31','UKJ3'],['UKJ32','UKJ3'],  
 ['UKJ34','UKJ3'],['UKJ35','UKJ3'],['UKJ36','UKJ3'],['UKJ37','UKJ3'],  
 ['UKJ41','UKJ4'],['UKJ43','UKJ4'],['UKJ44','UKJ4'],['UKJ45','UKJ4'],  
 ['UKJ46','UKJ4'],['UKK11','UKK1'],['UKK12','UKK1'],['UKK13','UKK1'],  
 ['UKK14','UKK1'],['UKK15','UKK1'],['UKK21','UKK2'],['UKK22','UKK2'],  
 ['UKK23','UKK2'],['UKK30','UKK3'],['UKK41','UKK4'],['UKK42','UKK4'],  
 ['UKK43','UKK4'],['UKL11','UKL11'],['UKL12','UKL12'],['UKL13','UKL13'],  
 ['UKL14','UKL14'],['UKL15','UKL15'],['UKL16','UKL16'],['UKL17','UKL17'],  
 ['UKL18','UKL18'],['UKL21','UKL21'],['UKL22','UKL22'],['UKL23','UKL23'],  
 ['UKL24','UKL24'],['UKM71','UKM21'],['UKM72','UKM22'],['UKM73','UKM23'],  
 ['UKM75','UKM25'],['UKM76','UKM26'],['UKM77','UKM27'],['UKM78','UKM28'],  
 ['UKM50','UMK50'],['UKM61','UKM61'],['UKM62','UKM62'],['UKM63','UKM63'],  
 ['UKM64','UKM64'],['UKM65','UKM65'],['UKM66','UKM66'],['UKM81','UKM31'],  
 ['UKM82','UKM34'],['UKM83','UKM35'],['UKM84','UKM36'],['UKM91','UKM24'],  
 ['UKM92','UKM32'],['UKM93','UKM33'],['UKM94','UKM37'],['UKM95','UKM38'],  
 ['UKN06','UKN01'],['UKN07','UKN03'],['UKN08','UKN03'],['UKN09','UKN03'],  
 ['UKN10','UKN04'],['UKN11','UKN05'],['UKN12','UKN04'],['UKN13','UKN03'],  
 ['UKN14','UKN02'],['UKN15','UKN03'],['UKN16','UKN05']  
 ];  
 \_oldcode *VARCHAR* := '';  
 item *VARCHAR*[] ;  
 holder *RECORD*;  
*BEGIN  
 FOREACH* item *SLICE* 1 *IN ARRAY* lookups  
 *LOOP  
 IF NULLIF*(nuts2016::*TEXT*, ''::*TEXT*) *IS NULL THEN  
 SELECT* on3r."NUTS318NM", on3r."NUTS318CD"  
 *FROM* ons\_nuts3\_regions on3r  
 *WHERE lower*(on3r."NUTS318CD") = *lower*(item[1])  
 *INTO* holder;  
 *--RAISE NOTICE '1%\t%\t->\t', holder."NUTS318NM", holder."NUTS318CD";* \_oldcode := \_oldcode || *format*('%s|%s|->|', holder."NUTS318NM",holder."NUTS318CD");  
 holder := *NULL*;  
 *SELECT* nuts.code, nuts.name  
 *FROM* nuts\_regions nuts  
 *WHERE lower*(nuts.code) = *lower*(item[2])  
 *INTO* holder;  
 *--RAISE NOTICE '2%\t%\n', holder.code, holder.name;* \_oldcode := \_oldcode || *format*('%s|%s|',holder.code,holder.name);  
 *ELSE  
 IF lower*(item[1]::*TEXT*) = *lower*(nuts2016::*TEXT*) *THEN* \_oldcode = item[2];  
 *EXIT*;  
 *END IF*;  
 *END IF*;  
 *END LOOP*;  
 *RETURN CASE  
 WHEN nullif*(\_oldcode, '') *IS NULL THEN* '\*' || nuts2016  
 *ELSE  
 upper*(\_oldcode) *END*;  
*END*;  
$$;

#### Code for fnmapregionsbyoutcode

CREATE FUNCTION fnmapregionbyoutcode(postcode character varying) RETURNS character varying

LANGUAGE plpgsql

AS

$$

DECLARE

lookups CHAR(5)[][] := ARRAY [

['BT26','UKN02'],['BT37','UKN02'],['BT21','UKN03'],['BT23','UKN03'],  
['BT55','UKN04'],['BT58','UKN04'],['BT68','UKN05'],['BT76','UKN05'],  
['BT77','UKN05'],['BT10','UKN01'],['BT11','UKN01'],['BT12','UKN01'],  
['BT13','UKN01'],['BT14','UKN01'],['BT15','UKN01'],['BT16','UKN01'],  
['BT17','UKN01'],['BT2','UKN01'],['BT3','UKN01'],['BT4','UKN01'],  
['BT7','UKN01'],['BT9','UKN01'],['BT18','UKN02'],['BT19','UKN02'],  
['BT27','UKN02'],['BT28','UKN02'],['BT36','UKN02'],['BT38','UKN02'],  
['BT39','UKN02'],['BT5','UKN02'],['BT6','UKN02'],['BT8','UKN02'],  
['BT22','UKN03'],['BT24','UKN03'],['BT25','UKN03'],['BT29','UKN03'],  
['BT30','UKN03'],['BT31','UKN03'],['BT32','UKN03'],['BT33','UKN03'],  
['BT40','UKN03'],['BT41','UKN03'],['BT42','UKN03'],['BT43','UKN03'],  
['BT44','UKN03'],['BT62','UKN03'],['BT63','UKN03'],['BT64','UKN03'],  
['BT65','UKN03'],['BT66','UKN03'],['BT67','UKN03'],['BT47','UKN04'],  
['BT48','UKN04'],['BT49','UKN04'],['BT51','UKN04'],['BT52','UKN04'],  
['BT53','UKN04'],['BT54','UKN04'],['BT56','UKN04'],['BT57','UKN04'],  
['BT82','UKN04'],['BT34','UKN05'],['BT35','UKN05'],['BT45','UKN05'],  
['BT46','UKN05'],['BT60','UKN05'],['BT61','UKN05'],['BT69','UKN05'],  
['BT70','UKN05'],['BT71','UKN05'],['BT74','UKN05'],['BT75','UKN05'],  
['BT78','UKN05'],['BT79','UKN05'],['BT80','UKN05'],['BT81','UKN05'],  
['BT92','UKN05'],['BT93','UKN05'],['BT94','UKN05'],['BT1','UKN01'],  
['BT20','UKN02']

];

\_outcode VARCHAR := '';

\_oldcode VARCHAR := '';

item VARCHAR[] ;

BEGIN

\_outcode = (regexp\_matches(postcode, '^(([A-Z][A-Z]{0,1})([0-9][A-Z0-9]{0,1})) {0,}(([0-9])([A-Z]{2}))$'))[1];

FOREACH item SLICE 1 IN ARRAY lookups

LOOP

IF lower(item[1]::TEXT) = lower(\_outcode::TEXT) THEN

\_oldcode = item[2];

EXIT;

END IF;

END LOOP;

RETURN CASE

WHEN nullif(\_oldcode, '') IS NULL THEN '\*' || \_outcode

ELSE

upper(\_oldcode) END;

END;

$$;